THE SECRET OF EGYPTIAN CHRONOLOGY

THE SECRET OF EGYPTIAN CHRONOLOGY

BY

HERBERT BRUCE HANNAY, ESQ.

OF THE INNER TEMPLE, BARRISTER-AT-LAW, ADVOCATE OF THE HIGH COURT OF JUDICATURE, CALCUTTA, AND AUTHOR OF "EUROPEAN AND OTHER RACE-ORIGINS," AND "A GRAMMAR OF THE TIBETAN LANGUAGE"

LONDON

SAMPSON LOW, MARSTON AND CO., LTD.

DEDICATED

TO THE

MEMORY OF

MY MOTHER

PREFACE

WHEN, three weeks or a month ago, I first plunged into the obscurities with which this *brochure* is concerned, I had no conception of the goal to which my researches eventually led me. As I delved amid the various data of knowledge which I found in the books, and worried over difficulties that were continually cropping up, truth after truth revealed itself to me, much to my surprise and delight.

At last I found myself gazing in amazement at the " find " of " finds "—THE SECRET OF ANCIENT EGYPTIAN CHRONOLOGY !

Now, a secret is usually supposed to be something that should be kept. This secret, however, is one that I hasten to impart to

others. It will come as a surprise to most people, as indeed it did to myself: to none more so, I expect, than to Egyptologists, even the most eminent of them.

If I have overthrown their ancient reign, I trust and believe that I have also shown them a greater kingdom than the one which they have lost.

To that brilliant advocate, charming personality, and good friend to me—Mr. Eardley Norton, of the Calcutta Bar—I owe a deep debt of gratitude, for his great kindness in seeing me through this little enterprise in matters financial.

H. BRUCE HANNAY.

Bengal Club, Calcutta,
31*st March*, 1916.

CONTENTS

THE SECRET OF EGYPTIAN CHRONOLOGY

PART I

Two of the most important and interesting Dynasties of Ancient Egypt, or Khem, are the 12th and the 18th.

In his *History of Egypt*, vol. i, p. 147, Professor W. M. Flinders Petrie assigns the 12th Dynasty to about B.C. 2778–2565. In his *Short History of the Egyptian People*, pp. 51, 252, Professor E. A. Wallis Budge places it about B.C. 2400, and says that the total of the years of the reigns of its 8 kings was between 225 and 240 years.

Petrie assigns the 18th Dynasty to about B.C. 1587–1328, basing his view on Mahler's calculation, by Sirius and the new moons, of the reign of THOTHMĒS III as being B.C.

1503–1449 (vol. ii, p. 29). Mahler's results, however, have since had to be slightly modified in consequence of further investigation by Lehmann and Eduard Meyer, who assigns Thothmēs III's 1st regnal year to B.C. 1501. Budge assigns the same Dynasty to about B.C. 1600–1400 (p. 252).

I have often, in a vague way, doubted the soundness of these and other chronological fixtures. It has always struck me that the principles on which the ANCIENT ROMI for so many centuries constructed their system of Chronology must have been those of a marvellously *exact science*, the product of an experience and a knowledge probably vastly greater than and superior to those of which we Moderns are so very proud. What chiefly convinced me of this was the wonderful way in which—despite numerous and often mighty gaps in the records—they seem to have been in the habit, from generation to generation, throughout a long antiquity, of regularly and

officially celebrating various kinds of Religious Festivals, or SED and HUNTI HEBS. This fact stares us in the face as we rummage amidst their archives.

But there is another fact which also stares us in the face, and that is that our Egyptologists, however eminent, have never given the Ancient Egyptians credit for having been able to construct their Chronology on the principles just alluded to. It has always been assumed that the science of the Egyptians was vague and rudimentary—a sort of groping after astronomical and geometrical truths with which we complacently imagine we are much better acquainted. That being the mental attitude of our high authorities, they have, of course, never dreamed of themselves attempting to solve the problems of Nilotic Chronology on principles of *exact* astronomical and geometrical science.

The result, very naturally, has been that their numerous methods—all different and all

unscientific, or only quasi-scientific—have produced divers rival re-constructions of the Past, as they imagine it to have been, all equally fantastic, and all mutually destructive.

For my own satisfaction, therefore, I determined to look into ancient Egyptian History and Chronology more closely than I had been looking into it before. The result, to my own intense surprise and gratification, is that I think I have found nothing less important than the Triple Key which, and which alone, unlocks the door of that CHAMBER OF MYSTERY which for so many centuries has remained closed.

That KEY is this—

(1) A conception of the SOTHIC CYCLE and its COMMENCEMENT wholly different from that held by our leading Egyptologists.

(2) A recognition of the SED and HÛNTI HEBS, or Ordinary and Quadruple Religious Festivals, as having been officially celebrated on the completion of certain fixed periods

based on the Sothic Cycle as thus conceived, and different from the periods hitherto imagined by the authorities.

(3) A recognition of the fact, hitherto seemingly overlooked, that while the datum regarding the Sothic Rising which occurred in the 7th regnal year of Senwosri III of the 12th Dynasty is based on the conception of a Calendar *progressing* round a Fixed Clock, the data listed in *Petrie*, vol. ii, p. 32, regarding the Risings in the reigns of Amenhotep I, Thothmēs I, Hatshepsūt, Thothmēs II, and Thothmēs III, are given in terms of a Progressive Calendar *represented as retrogressing*. Moreover, there are mistakes in some of the dates mentioned in the list. For instance, the Rising reported as having taken place on the 9th Epiphi in the 9th regnal year of Amenhotep I, should have been reported as having occurred on the 7th Epiphi in the 7th regnal year of that monarch.

From the beginning of their existence as

a civilised community the Egyptians based their Chronological System on the theory of a Cycle, or Cycles, precisely meticulated on a certain plan, and so conceived that any date in their history, if correctly recorded, is, by reference to that Cycle, capable of being unerringly traced back to that Prime Date, or point in Time, which is now known as *Annus Mundi* 0, or B.C. 3996, and which corresponded with the Original Autumnal Equinox, *i.e.* our 22nd–23rd September. This was really the 4th Day of the Natural Year, the 1st Day having been 0–1, *i.e.* our 19th–20th September.

Hence, the original New Year's Day—called 1st Thoth—was at the Autumnal Equinox, the 4th Natural day, a day to which every celestial body pays annual homage.

Much of this was long ago brilliantly though rather erratically expounded by Mr. J. B. Dimbleby. Unfortunately what he wrote was often badly arranged, and suffered from

a running commentary of remarks that were hardly necessary to the subject in hand. Still more unfortunately he had peculiar views in other respects, and so the scientific aspects of his really invaluable exposition met with little or no recognition. For example, it is never even referred to in the works of scientific and archæological pontiffs such as Breasted, Brugsch-Bey, Petrie, Budge, etc. Nevertheless Dimbleby came nearer to finding the truth than ever they have come.

Where Dimbleby's Chronological System went wrong in regard to Ancient Egyptian History, I shall explain presently. By having had the good luck to discover the little point wherein he failed, plus my other discoveries, if I may so call them, I have discovered everything—for the re-arrangement of *all* our data of knowledge is merely a matter of time, care, and labour.

Here I propose to confine myself to the examination of a few outstanding features of

Egyptian History, such as the eras of the 4th, the 6th, the 12th, and the 18th Dynasties—more particularly the periods of Senwosri III and Thothmēs III. If we can put these on a definite and unshakable chronological basis, we shall, I venture to say, be able to re-construct the chronology of many other Dynasties. Some, no doubt, owing to the absence of archæological data on which to work, will always remain in the Land of Shadows.

To assist the reader in following my lines of thought, I have constructed several Cyclical Clocks and Tabular Statements, which he will find annexed or incorporated in the text.

The Natural Year, as we know, has about 365¼, or, more exactly, 365·242 days. These we divide up into 12 months, each with its own length in days, and an additional day for February every leap-year, thus synchronising our calendar as nearly as possible with Solar Time.

What did the Ancient Egyptians do?

They were astronomers and geometricians. They went, therefore, to the spheroid, or circle, with its 360 degrees to represent the days in the year, its 12 divisions representing the 12 months, and its subdivision of each of these divisions into 30, representing the number of days in each month. They did not, however, as we do with our year, start theirs haphazard at some arbitrary point. They had an eye on the Natural Year. They therefore started theirs at the commencement of that year, which they knew to be the Autumnal Equinox, *i.e.* they knew that the movements of all the heavenly bodies were arranged in a certain way with reference to that particular day. In this connection they had Sothis, Sirius, or the Dog-Star, specially in mind.

Next, regarding each month, or division of 30 *days*, as one of 30 *years*, they found themselves in possession of a Cycle of 1440 YEARS. They soon perceived, however, that every

year, *i.e.* every 360 degrees, they were, with such a Cycle, short of Natural Time by 5 days; every 2 years, or 720 degrees, short by 10 days; every 3 years, or 1080 degrees, short by 15 days; and every 4 years, or 1440 degrees, short by 20 days. Thus, at the end of every Cycle of 1440 Years, they would be short of Natural Time by 20 Years of 360 days each. In short, as practical men, they recognised that a Cyclical Clock like that would not do.

In a subsequent age the Ancient Greeks thought that what the Dwellers on the Nile did to get out of their difficulty was to intercalate what they called 5 Epagomenal Days at the end of their 12th month, Mesore.

But is this what the Egyptians did? No; they were a scientific race. They apperceived the Natural Year as containing about 365 instead of 360 days, and, going back again to the spheroid, or circle, they constructed another Cyclical Clock, containing, no longer 4 quadratures of 360 degrees each,

totalling 1440 degrees, but 4 quadratures of 365 degrees each, totalling 1460 degrees. This gave a monthly division, no longer of 30 degrees or days as formerly, but of $30\frac{5}{12}$ days or degrees. Each day, therefore, represented $1\frac{1}{72}$ degrees; 4 days represented $4\frac{1}{18}$ degrees.

Next, regarding 1 *Day* or Degree as 1 *Year*, they found themselves in possession of a Cycle containing 48 divisions of $30\frac{5}{12}$ Years each, totalling 1460 Years. This Cycle also started from the Autumnal Equinox. By means of this re-constructed Cyclical Clock—whereinto the necessary 5 Extra Days had been geometrically incorporated—they thus reduced the amount of time by which they would fall short of Natural Time from 20 Days every 4 Years, as formerly, to $1\frac{1}{72}$ Days, or a loss of only $370\frac{5}{72}$ Days at the end of every Cycle of 1460 Years. In strict accordance with theory, the month in their Annual Calendar should have consisted of $30\frac{5}{12}$ Days; but as a matter

of fact they seem in practice to have retained the old convenient division of 30 Days. In reality, however, that period of 30 Days, or 1 month, was obviously only as it were a counter, emblematical of the true Cyclical division of $30\frac{5}{12}$ degrees.

As a result, their Artificial or Nominal Civil Year, indexed by New Year's Day, or 1st Thoth, revolved forwards by regular stages round the Fixed Clock of the Original Year; and another date, which originally coincided with what was called the Heliacal Rising of Sirius, revolved backwards by similar regular stages, in manner hereinafter explained.

Nevertheless, this was undoubtedly the form of the Cyclical Clock or Calendar finally adopted and officially used by the Ancient Egyptians, as the detailed observations I am now about to make will abundantly prove.

TABLE

Showing how the Ancient Egyptians converted the divisions of the original SPHEROID into those of their SOTHIC CYCLE.

Spheroid (discarded except for purposes of common life).	Sothic Cycle Divisions.	Sothic Cyclical Nomenclature.
1 Ordinary Calendar Day.	1 Day, or Subdivision = $1\frac{1}{72}$ Spheroidal Subdivisions.	1 Grand Panegyrical Div. = G.P.D. = 1 Sothic Day regarded as a YEAR.
4 Ord. Cal. Days.	4 Days, or Subdivns = $4\frac{1}{18}$ Sph. Subdivns.	4 G.P.D.'s = 4 S. Days regarded as YEARS.
30 Ord. Cal. Days.	30 Days, or Subdivns = $30\frac{5}{12}$ Sph. Subdivns.	1 G.P. Month, or G.P.M. = 30 S. Days regarded as YEARS.
360 Ord. Cal. Days, or 1 Year.	360 Days, or Subdivns = 365 Sph. Subdivns.	1 G.P. Year=360 S. Days regarded as YEARS.
1440 Ord, Cal. Days, or 4 Years.	1440 Days, or Subdivns = 1460 Sph. Subdivns.	1 SOTHIC CYCLE= 1440 S. Days regarded as YEARS.

This Cyclical Clock was named by the Ancient Egyptians, its inventors, the SOTHIC

Cycle, and the year on which it is based was called by them the Vague Year.

The so-called Heliacal Rising of Sirius, which, according to Mr. Reginald Stuart Poole, "marked the commencement of a Sothic Cycle" (*Horae Aegyptiacae*, p. 29), was a Rising observed annually at Memphis, or Thebes, or some intermediate locality, on our 20th July, but which, on the Cycle of Progressive New Year's Day, or P. 1 Thoth, occurred during each month of that Progressive or Vague Year successively, and continued in that month, according to Poole (p. 32) for 120 Julian Years, but in reality (see the divisions of the Sothic Cyclical Clock) for 121$\frac{3}{4}$ Years, when calculated on the basis of a Cycle of 1460 Years. If on the basis of a Cycle of 1461 Years, it would be 121$\frac{3}{4}$ Years: never 120 Years, save on the Rejected Clock of 1440 Years.

Another class of Heliacal Risings of Sirius occurred for the first time on 1st Epiphi

(our 19th–20th July) in A.M. 0–1, and for the second time in A.M. 162, and thereafter every 162 Years. This is the 162-YEARS' SOTHIC CYCLE. It is connected with the ECLIPSE CYCLE, and will probably prove useful as a check.

What seems to be regarded as the Real Heliacal Rising is probably the one which coincided with that point on the Cycle at which P. 1 Thoth reached 1 Epiphi on the Fixed Clock. This happened only once in the Cycle, and was always at the ~~121⅔rd~~ Cyclical Division, Degree, or Year, of the 4th GREAT PANEGYRICAL YEAR (or last stretch of 365 Years) of the CYCLE.

Professor Budge, writing in 1914, makes the following statement :—

"There is no evidence that the early dynastic Egyptians knew anything about the Sothic Period (*i.e.* the length of time between two risings of Sothis with the sun, or 1460 Sothic years, each containing 365¼ days,

1461 true, *i.e.* solar years), or that they ever made, or were capable of making, the elaborate calculations which the use of the Sothic Period would have necessitated.

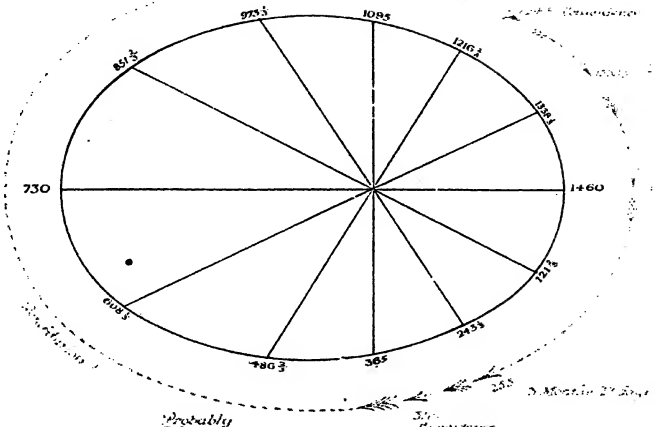
"Whether the Egyptians were acquainted with the Sothic Period or not matters little, for this period is useless in assisting us to assign a date to the beginning of Egyptian civilisation, and the existing Egyptian monuments do not help us" (p. 243).

Well, if Professor Budge is still of the same opinion, I have what I think will be a little surprise for him.

Speaking in 1850 of the "Sothic Year, or year which commenced at the rising of Sothis," R. S. Poole also made the following statement:—

"Hitherto I have found it of no use in the application of Egyptian chronology to history" (p. 9).

In the following pages I propose to show that there is plenty of convincing evidence



N. 13.
Ellipse . Clock.
Red . Natural Time.

See M. 216-217.

that the Ancient Egyptians not only were intimately acquainted with the SOTHIC CYCLE and were capable of calculating in terms of its nature (though that was certainly a very different conception from the one held by our leading Egyptologists), but also that they must have so calculated throughout an impressively long and majestically ordered Antiquity. And I venture to predict that when, and only when, we frankly recognise this, and ourselves bear in mind the characteristics of the SOTHIC CYCLE as they conceived it, while endeavouring to coördinate the data of information that we obtain from the monuments and elsewhere, it will be vouchsafed us to behold those data arranging themselves in relation to each other and to outside facts in a way that is likely to startle some of our authorities.

In vol. i, p. 250, Petrie states :—

" Censorinus, writing in 239 A.D., states that the Egyptian New Year's day, 1st of

Thoth, fell on the 25th of June ; and a hundred years before, in 139 A.D., it fell on the 21st July, ' on which day Sirius regularly rises in Egypt.' Hence the beginning of a Sothic period of 1460 years, or the New Year's day falling on the 21st of July at the heliacal rising of Sirius, took place in 139 A.D. ; likewise in 1322 B.C., in 2784 B.C., and in 4242 B.C., or thereabouts."

The view here adopted seems to be similar to that on which Poole based his system of Egyptian Chronology as expounded in *Horae Aegyptiacae*, for there, speaking of the Sothic Cycle, and the *so-called* " heliacal rising," he says :—

" It is equally certain that one of these great cycles, called the ' Sothic Cycles,' commenced on the 20th of July, B.C. 1322 " (p. 28).

To this idea he frequently reverts in the course of the work cited. On p. 29 he says that Sothis, *i.e.* Sirius, " now rises "—he was

writing in 1850—heliacally at Memphis on or about the 20th of July, O.S., and at Thebes on or about the 17th of the same month. "Therefore," he says, "it is evident that in B.C. 1322 it must have risen heliacally some days earlier than the 20th of July." "Thus," he concludes, "the rising of Sothis on the 20th of July, B.C. 1322, which marked the commencement of the earliest known Sothic Cycle, was not what the astronomers call the heliacal rising" (p. 30).

It appears to me, however, to be an unsound view, and is, I believe, responsible for much of the woolly chaos presented by the many different attempts that have hitherto been made to elucidate the problem of Egyptian Chronology.

We must have definite ideas, if we wish to arrive at definite conclusions. It is necessary, therefore, to point out that a clear, great, and impressive distinction subsists between the conception of the SOTHIC CYCLE spoken of

thus by Poole, Budge, Breasted, and Petrie, and defined by Budge as the "length of time between two risings of Sothis with the sun, or 1460 Sothic years" (p. 243), and the conception of the SOTHIC CYCLE *as known to the Egyptians and practically applied by them for ages in connection with their regularly recurring* HEBS.

The Sothic Rising just referred to, *i.e.* the Rising which occurred *once in a Cycle*, on P. New Year's Day, or P. 1 Thoth, took place for the 1st time in A.M. 1216⅔ = B.C. 2770⅓. It next occurred, for the 2nd time, in A.M. 2676⅔ = B.C. 1910⅓. The 3rd occasion was in A.M. 2136⅔ = B.C. 3501. The 4th time was in A.M. 4596⅔ = A.D. 504⅔. It therefore will not happen again till A.M. 3956⅔ = A.D. 2957⅔ = 141 years hence. If the Rising in B.C. 1319⅓ marked what is called the ERA OF MENOPHRĒS, it occurred on the 28th Mesore, in the reign of Tūt.ankh.amen, of the 18th Dynasty.

THE REAL HELIACAL RISINGS OF SOTHIS THAT OCCUR ONLY ONCE IN EACH CYCLE OF 1460 YEARS.

A.M.		B.C.		CONV. B.
1217	=	2778	=	2786
1218	=	2777	=	2785
1219	=	2776	=	2784
1220	=	2775	=	2783
2677	=	1318	=	1326
2678	=	1317	=	1325
2679	=	1316	=	1324
2680	=	1315	=	1323

		A.D.
4137	=	138/9
4138	=	139/40
4139	=	140/1
4140	=	141/2
5597	=	1598/9
5598	=	1599/1600
5599	=	1600/1
5600	=	1601/2
7057	=	3058/9
7058	=	3059/60
7059	=	3060/1
7060	=	3061/2

But, ever in relation with the Sun, and particularly with the latter's annual position at the AUTUMNAL EQUINOX, Sirius, in his own good time—for, according to some, is he not our Primary ?—appears to rise heliacally every year. This annual "manifestation" is what I take to be the Rising that Poole referred to when he spoke of "the so-called heliacal rising." What I understand to be the *real* Heliacal Rising is the phenomenon that occurs only once in every 1460 years.

"The New Year's day falling on the 21st July at the heliacal rising of Sirius" in B.C. 1322 (*Petrie, supra*) is, true enough, the beginning of what may be called *a* Period of 1460 years (though I prefer 20th July to 21st July)—just as from A.D. 1916 to A.D. 3376 would also be such a Period—but it is *not* the beginning of what the Egyptians meant when they spoke of their SOTHIC CYCLE. They did not mean a Period *beginning* when P. 1 Thoth, or P. New Year's Day, coincided

with the point we call 20th July, or its variant where Sirius rose annually—though this coincidence did happen once in every 1460 years, namely, at the point in the stretch of 121⅔ years immediately following the 1095th year on every Cycle, when P. New Year's Day reached 1 Epiphi on the Fixed Clock. This point was Cyclical Division 1216⅔. Also Divisions 1217⅓, 1218⅔, and 1219. for it remained there 4 years. Division 1216⅔ on the 2nd Cycle was A.M. 2676⅔. Hence, it was really B.C. 1810⅓, not B.C. 1322. That is to say, the Sothic Cycle, as known to and worked by the Egyptians, did not *begin* in B.C. 1810⅓, much less in B.C. 1322. It began originally in A.M. 0–1, *at the Autumnal Equinox*, when P. 1 Thoth coincided with F. 1 Thoth on the 4th day of the opening Natural Year; and it began again *at the same point* every 1460 years afterwards.

The Period spoken of by Poole and Petrie, and, I suppose, adopted by Breasted and Budge

also, is one that, worked backwards, does indeed conduct us *on paper* through the dates Petrie specifies—139 A.D., 1322 B.C., 2784 B.C., and 4242 B.C. (*i.e.* assuming that there ever was, though there was not ever, and could not ever have been, any such year in Natural Time as known to us as 4242 B.C.); nay (again on the same assumption), there is really no reason why we should not go on backwards *ad infinitum*, world without beginning. But a mere *paper computation* like this, is unworkable with the facts of Natural Time; because, though it would be foolish to say there was ever a "Beginning of the World" in the sense and at the time once, and perhaps still, believed in by the representatives of Old Orthodoxy, yet we know that there actually was such a thing as an "Astronomical Beginning," or Epoch—call it what we like—namely, the Prime Date *Annus Mundi* 0, or B.C. 3996, when, as Mr. Dimbleby has shown, and as indeed is undeniable, all

the various Cycles, or Lines of Natural Time, now in course of their majestic careers (*e.g.* the great Date-Repeating Eclipse Cycle of 649 Years, the Sothic Cycle of 1460 Years, the 162 Years' Sothic Cycle, and several other important Cycles) began together, and beyond which there was no doubt *Duration*, but not Duration under conditions or relations similar to those which sprang magically into existence with the commencement of the present Cycles, or Lines of Time, or Conditions or Relations of Duration.

On this astronomical basis—the one spoken of by Poole, Petrie, etc.—the 21st, or let us rather say the 20th, July, A.D. 139, considered by them as the Commencement of a Sothic Cycle of 1460 Years, will *never* take us back to the Prime Date, A.M. 0. Proof: A.D. 139 was A.M. 4138, which is made up of 2 Cycles of 1460 Years each, plus 1218 years of the 3rd Cycle. This, on the Clock, is, as I have said, exactly the point, Degree ~~1216½~~ 1220 6/24, at which

Progressive or Nominal 1st Thoth corresponds with Fixed 1st Epiphi, or our 20th July. The Rising of Sirius also occurred on the same date in the next following 3 years. Now, travel back 1460 years, or 1 Cycle-period, and we come to A.M. 2678 or B.C. 1318. Another Cycle-period back, and we come to A.M. 1218, or B.C. 2778. But, if we attempt the same thing once more, we *cannot* go back 1460 years. Why? Because we are working back along a line that, in connection with the Real Sothic Cycle, is not divisible cyclically. In other words, there are only 1218 years left, after which we perforce arrive up against A.M. 0, or B.C. 3996. Beyond that stretches, if not unconditioned or unrelated DURATION, at least Duration conditioned or related in some wholly different manner. The reconstruction of the Kosmos which took place at this mysterious point of what *we* call Time, may be an event that *is itself cyclical*. I anticipate that that will prove to be the case. Many

extraordinary features of our present Kosmos —*e.g.* the revolution of the outside satellite of Saturn in a direction exactly opposite to that of all his other satellites—indicate to me that it is a survival of a preceding Kosmos run on Lines of Time quite different from those we now calculate by, or rather *should* calculate by. This is my explanation of the fact which is gradually being realised now, that not only are the movements of the heavenly bodies based on mathematics, but in some respects they seem actually to transcend mathematics. How solve the riddle? I solve it by saying that the TIME-STANDARDS of the 2 Universes are entirely different. That is, some of our heavenly bodies have inherited influences originating in the previous TIME-SYSTEM.

Now, connected with this SOTHIC CYCLE of 1460 YEARS, the Ancient Egyptians were in the habit of officially celebrating certain RELIGIOUS FESTIVALS, called SED HEBS and HUNTI HEBS. By Greek writers and by

Poole they were called PANEGYRICS. One, it is said, was celebrated *every* 30 *years*. Petrie says *every* 28 *or* 30 *years*. This was called a GREAT PANEGYRICAL MONTH. By Dimbleby the Festival then celebrated was called an ORDINARY FESTIVAL. One is also said to have been celebrated *every* 120 *years*. This is what Dimbleby calls the QUADRUPLE FESTIVAL. It seems to correspond with the HUNTI HEB. The period covered by 12 Ordinary or 12 30-Years' Festivals, or by 3 Quadruple Festivals—*i.e.* 360 Years—was called a GREAT PANEGYRICAL YEAR.

This is what we are told by the authorities.

If, however, we construct a CLOCK of the GREAT PANEGYRICAL CYCLE, we shall find that these Ordinary and Quadruple Festivals, *when taken as described*, will not work with the SOTHIC CYCLE OF 1460 YEARS! As that was in fact the Cycle in connection with which they were celebrated, it follows that an Ordinary Festival *could not* have been one celebrated,

as is said, every 30 years, much less could it have been one celebrated every 28 years, *nor could* a Quadruple Festival have been one celebrated, as is said, every 120 years. The sum of the divisions of such a Cycle amount to only 1440 years.

All our authorities, without exception, have failed to see this. All, without exception, in their investigation of data and their re-construction of Dynastic Periods, have made their calculations on the basis of 30-Years' Festivals or 120-Years' Festivals referred to a Cycle with which they cannot possibly have been connected—the SOTHIC CYCLE OF 1460 YEARS. In fact, with the exception of Petrie, all have been blind to the supreme value of these HUNTI and SED HEBS. And even Petrie recognises their value in such a way as renders his recognition of them useless: for his conception of a SED HEB is that it was a Festival which occurred "at the close of the 28 or 30 years periods, when Sirius rose a

week later in the Calendar (owing to the month-names shifting earlier)," (vol. ii, p. 31).

What with this and their wholly inaccurate conception of the SOTHIC CYCLE itself, no wonder that these able and estimable Savants have never been able to achieve results that pan out properly!

By the lines on which I propose to proceed I, as it were, restore to the Ancient Egyptians that credit which, it would appear, has hitherto been withheld from them—the credit of having possessed a knowledge of astronomy and geometry perhaps greater and more definite than our own; and I give the results of my investigations—my conclusions and my reasons for them—in the present brochure.

As there evidently was for the Ancient Egyptians, *and therefore also has to be for us, if we wish to understand the vestiges of their marvellous Culture*, a genuine Sothic Cycle of exactly 1460 years based upon Natural Time,

the clue that we must follow amidst the labyrinth of their records is plain, the light under which we must examine those records is clear as the noon-day sun.

We must regard the periods on *completion* of which the various *Hebs* were celebrated in the light of *the Divisions of the Cycle of* 1460 *Years from the Autumnal Equinox.* In other words, we must assume that the ORDINARY FESTIVALS were celebrated, not on the completion of periods of 28 or 30 years connected with an un-astronomical line of Cycles, one of which is supposed to have commenced in B.C. 1320, as Breasted says, or B.C. 1322, as Poole says, but *on the completion of periods of exactly* $30\frac{3}{4}$ *Years connected with the line of genuine Sothic Cycles which commenced at the* AUTUMNAL EQUINOX *in* A.M. 0–1.

Similarly, we must assume that the QUADRUPLE FESTIVALS commenced, not on the completion of periods of 120 years having no relation to Natural Time, but on *the completion*

of periods of exactly $121\frac{2}{3}$ *years similarly connected with the true Sothic Cycle.*

A GREAT PANEGYRICAL YEAR thus really consisted of exactly 365, not 360, years. Four of these G.P.Y.'s made up the SOTHIC CYCLE OF 1460 YEARS.

Lastly, it may be worth noticing that the 162 YEARS' SOTHIC CYCLE marches in a certain relation with the GREAT DATE-REPEATING ECLIPSE CYCLE OF 649 YEARS. That is to say, every Real Heliacal Rising in this connection takes place exactly on the completion of every 3rd stage of 54 Years on the Eclipse Cycle=the completion of every 9th stage of 18 Years on the same Cycle. No doubt we shall some day discover a record of one of these synchronisms. If and when we do, it will serve as a welcome check.

Breasted, in that fine work, *Ancient Records*, p. 30, says, "We must seek the invention of the Egyptian Calendar at a time when its 3 seasons coincided roughly with those

of Nature, as they must have done at its introduction. We know," he says, "that it coincided with the Sothic year, and that *a new Sothic Cycle began some time in the period* 140–41 *to* 143–44 A.D." (Petrie's A.D. 139). We at once see that he is thus on the very same unscientific, because un-Natural line of thought as Poole. From that unrelated date he, just as Poole did, takes back the coincidence of the Calendar with Nature, by periods nominally identical with that of the Sothic Cycle, yet not *on* that Cycle, *i.e.* by periods of 1460 years, through B.C. 1320 (Poole's B.C. 1322), B.C. 2780 (Petrie's B.C. 2784), and B.C. 4241 (Petrie's B.C. 4242)—really a date in the previous Kosmos. His reason for not stopping at B.C. 2780 is that it is impossible that the Calendar was first introduced so late as then, in the midst of the highest culture of the Old Kingdom. "Moreover," he adds, "the 5 days over and above the 360 days of the 1440-Years' Cycle are mentioned in the Pyramid texts."

Thus, all Breasted's calculations, and all the calculations of such other authorities as take this view as to when the Sothic Cycle begins—though no doubt perfectly accurate in themselves—are, like those of Poole, based on something that is itself baseless.

How much more scientific to realise, as the Egyptians did, that the Calendar, whenever invented and introduced, was conceived on the basic theory that it originally coincided with Nature at the Autumnal Equinox, A.M. 0–1, on the 4th Day of that 1st Natural Year, and to take that as the beginning of each Cycle, *i.e.* the beginning of each team of 4 G.P.Y.'s, and the beginning of each year.

Breasted and his fellow-savants take what I call Year, Degree, Cyclical Division, or Point 1319 5/12 1210⅔ on the Cycle, Clock, or Calendar, as the initial point from which to trace the subsequent shiftings of Progressive 1st Thoth, or Progressive New Year's Day; basing himself on the fact (*Ancient Records*, Vol. I, p. 26), that the

Egyptian began his Year at the Advent of the Inundation, which by a happy accident approximately coincided with the Rising of Sothis after a certain period of invisibility. "This occurred each year on July 19 (Julian)," for thousands of years B.C., "until far down in the last thousand years B.C.," when it shifted to July 20—my Point ~~1216⅔~~ 1220 1-2/72 on the Clock. Quite true: it suited the Egyptian, for some purposes of his own, to artificialise the form of the year in that way. But this does not make Point ~~1216⅔~~ 1220 1-2/72, or 1st Epiphi, the correct point to start from, in calculations intended to place some particular datum in Ancient Egyptian History in its true chronological place *on the Sothic Cycle, which always begins at the Autumnal Equinox.*

On p. 31 of *Ancient Records*, vol. i, Breasted explains how he calculates the Sothic Rising in the 7th regnal year of Senwosri III of the 12th Dynasty, as happening in B.C. 1880. He takes New Year's Day as being at 1st

Epiphi (my Cyclical Division ~~1216¾~~ 1220 6-3/72), where he says the Rising occurred at the beginning. In Senwosri III's time it is authoritatively stated to have occurred on the 15th day "of the 8th month." This Breasted calculates from 1st Epiphi, *making the 8th month Mechir*. He thus gets a 225 days' shift. As, according to him, the shift occurred at the rate of 1 day in 4 years, the Rising works out at 900 years since B.C. 2780, when, he says, the Calendar had last coincided with Nature. Result, B.C. 1880.

But, applying this very method to the Risings on 9th Epiphi in the 9th year of Amenhotep I of the 18th Dynasty, and the 16th year of Queen Hatshepsūt=the 3rd year of Thothmēs III, the results do not tally with the dates assigned for these data by Breasted himself, namely, B.C. 1548 for Amenhotep I, and some time in B.C. 1501–1447 for Thothmēs III (*Ancient Records*, vol. i, p. 42).

In the 1st case the 9 days' shift from

1st Epiphi=36 years from B.C. 1322, which, I presume, was the next suitable Coincidence date. Result, B.C. 1286!

In the 2nd case, which happened 12 days later, on the 21st Epiphi, the shift was 48 years from Amenhotep I's time. Result, B.C. 1238! Or, if we still retain B.C. 2780 as the last Coincidence date, and assume that the shift in the 1st case was a whole round of the Clock, with an overplus of 9 days=396 days=1584 years from the Coincidence, we get B.C. 1196!

In the 2nd case we would get B.C. 1148½! Some other factor, therefore, seems necessary to bring it up to the stated period, namely, the 16th Century B.C. Moreover, it must be some factor which did not apply in the case of the Rising in Senwosri III's time.

The foregoing is what Breasted calls "a matter of the simplest arithmetic." On this supposed entrenched position I venture to make the following assault.

True enough, the Rising first occurred at 1st Epiphi on both Clocks, the Fixed and the Progressive, *i.e.* at Cyclical Division ~~1216⅔~~ but the Coincidence of Nature with the Calendar is always at the *Autumnal Equinox* —originally A.M. 0, afterwards at regular intervals of 1460 Years.

Moreover, we must take the day as equalling, *not* 4 Years, but $4\frac{1}{8}$ Years, or Cyclical Divisions.

Further, Mechir is *not* "the 8th month." The 8th month counts from 1st Thoth, *not* from 1st Epiphi. It is therefore Pharmuthi.

Thus, when Progressive 15th Pharmuthi was supposed to have corresponded with 1st Epiphi on the Fixed Clock, the shift was still 225 days = $912\frac{1}{2}$ Cyclical days. But that obviously does not represent *True Time*. It only represents apparent Calendar Time. True Time is found by seeing where P. 1 Thoth points to, when P. 15th Pharmuthi points to F. 1 Epiphi.

P. 1 Thoth then points to 17th Athyr on the Fixed Clock = ~~3004~~ Cyclical Divisions from A.M. 1460 = one of the following 4 Years —A.M. ~~1768~~, 1769⅔, 1770⅔, or 1771⅔ = B.C. 2227, 2226, 2225, or 2224.

Similarly, when P. 9 Epiphi was supposed to have corresponded with F. 1 Epiphi, the shift was really 36½ Cyclical Divisions, or Years, for the 9 days. That, however, was only apparent Calendar Time. True Time, one would think, is indicated by P. 1 Thoth, which in this case points to 23rd Mesorē = Cyclical Division 1427⅛ = A.M. 2887⅔ = B.C. 1098⅓.

Similarly, when P. 21 Epiphi was supposed to have corresponded with F. 1 Epiphi, the shift was 21 days = 85⅛ Years, or Cyclic Divisions. That, again, was only apparent Calendar Time, True Time, as indicated, one would think, by P. 1 Thoth falling at F. 11 Mesorē, was Cyc. Div. 1378⅝ = A.M. 2838⅝ = B.C. 1157⅓.

Now, observe what seems to be a most disconcerting fact. These are *retrogressed results*. That is, Hatshepsūt and Thothmēs III appear with *an earlier date then Amenhotep I who preceded them*. Herein surely is mystery!

In the case of the Rising that occurred in the remote days of Senwosri III, our calculations were made on the assumption that the Calendar was progressing round a Fixed Clock. Here, too, *we know right well that it is still so progressing*, by stages of $4\frac{1}{8}$ Cyc. Divs. or Years to a Calendrical Day; and yet, by this extraordinary list on p. 32, vol. ii, of *Petrie* (how extraordinary seems not to have been noticed hitherto), it is represented as *retrogressing*, and the Fixed Clock seems to be *progressing!*

On p. 33 Petrie complicates matters a little more by suggesting that the 9th Year of Amenhotep I was really 9 years earlier than as stated. I do not, however, think that we need worry about this. There is obviously

something wrong somewhere to the extent of 9 years, and Time has somehow been twisted round backwards. In short, the position has become almost hopelessly complicated.

For several days I was completely mystified. I could not detect any flaw in my Tables, and yet they produced impossible results.

I tried to find a way out by assuming that the 9th of Epiphi should be dragged back again, and put *on* as far forward from F. 1 Epiphi (normal point of Rising) as the Scribes had put it back. That would not work. I grew desperate: I re-constructed my Tables, making the Cyclical Divisions retrogress instead of progress. That merely tangled matters up a little more.

At last light dawned. It occurred to me that we have really 3 different kinds of Clock, or Time Standards, to deal with—

(1) The Clock of Natural Time;

(2) The Artificial Clock representing Natural Time as fixed;

(3) The Artificial Clock whose New-Year's-Day hand progresses round the Fixed Clock.

I had been leaving the Clock of Natural Time out of the account. We shall see that the Scribes did so too. Now, for some centuries past, Natural Time—represented for us by Sothis—had, as compared, not only with the Fixed Clock, but also with the Progressive Clock, been imperceptibly but steadily *speeding up*. The result was to make the Progressive Clock have the appearance of retrogressing. It was, of course, still progressing, as compared at least with the Fixed Clock. The Scribes responsible for the data supplied in the list just mentioned, seem to have perceived that the Calendar was somehow or other 9 years out, and, to rectify matters, as they thought, *they put the Progressive Calendar back* 9 *years*, thus forcing it to be what it never had been and never could be, as compared with the Fixed Clock, *i.e. retrogressive*. We shall find

that they also played some other little tricks with the data; but of these anon.

Now, what had really happened was that, although the Progressive Clock was still progressing at its usual rate round the Fixed Clock, NATURAL TIME, or let us call it SOTHIC TIME, *had been progressing too*, nay, at a rate even more rapid than that of the Progressive Clock!

The result was that, as compared with the Clock of Sothic or True Time, *both the Fixed Clock and the Progressive Clock had become retrogressing!* The back or smaller Cyclical Divisions of the Fixed Clock, now representing True Time, had, unknown to the Scribes, been sweeping forwards, *i.e.* had progressed, *and had in fact taken the places of the old Cyclical Divisions shown in my Tables!*

For instance, in the case of the Rising said to have occurred on 9 Epiphi, P. 1 Thoth, progressing round the Fixed Clock, is shown in my Tables to be pointing to Cyc. Div.

1427⅛ on the Fixed Clock. Well, that is an illusion. Those Tables are constructed on the basic idea that the mutual relations of the Clocks remain normal. But they had *not* remained normal. A great change had been gradually and imperceptibly supervening. The Fixed Clock no longer represented Kosmic facts.

Let us try to be even more definite.

When Sothis rose in Amenhotep I's time on 9 Epiphi, and yet (despite the fact that the Progressive Calendar was revolving round the Fixed Clock at the rate of 4¼ Cyc. Divs. in each day, or 1 day in 4¼ Cyc. Years) on the next occasion, in Thothmēs I's time, rose on 14 Epiphi, and on the next occasion, in Thothmēs III's time, on 21 Epiphi, and on the next occasion, also in Thothmēs III's time, on 28 Epiphi, though the figures are successively higher, Sothis was *really rising earlier each time!* That is, the Clock of Natural Time was going in the same direction as the

Progressive Clock, *but was sweeping ahead of it at a regular rate of progress!* Its shift from one stage to another, say from the 21st to the 28th Epiphi, must have been much greater than the rate at which the Progressive Clock was moving. In this last case it moved through 7 days of the Fixed Clock in 30 years, *i.e.* from Thothmēs III's 3rd to his 33rd year. In other words, it was moving at about the same rate, with reference to the Fixed Clock, as that at which the Progressive Calendar was moving with reference to the same Clock. But with reference to the Progressive Clock the Clock of Natural Time must have been moving at *double* the rate of the other.

Hence, with regard to the Rising said to have occurred on 9 Epiphi, as Cyc. Div. 1427$\frac{9}{25}$ (the point of True Time shown in my Tables) was 2161$\frac{9}{25}$ Cyc. Divs. *further ahead* than Cyc. Div. 1210$\frac{9}{25}$ (the normal point of Rising at Equinox), the Cyc. Div. that had taken the place of Cyc. Div. 1427$\frac{9}{25}$ in consequence of the

speeding up of Natural Time must have been the one that was exactly 2101⅛ Cyc. Divs. the other side of, *i.e. behind* Cyc. Div. 1210⅔. That was Cyc. Div. 1005⅛. We may call this the speeding up of Natural Time, or we may call it the retrogression of the *old* Fixed Clock. But whatever name we give it, it must have been effected in a period of 2108 Cyclical Years, or 52 times 4 1/8.

I don't know whether I have been able to explain myself with sufficient clearness. If not, my apology must be that the subject is both new to me and somewhat abstruse. An astronomer and mathematician would no doubt state the problem and its solution more scientifically. Approaching it with no technical knowledge, I can only describe the tangled position and my method of straightening it out as I visualise them. But however this may be, I have no doubt whatever as to the soundness of my results, for they prove themselves, as will shortly be seen.

According to Lt.-Col. Condor (*The Hittites*, p. 180), the rising of Sirius at present takes place about 2½ minutes *later* each succeeding year, but about 2900 years ago the rate of retardation was nearly 5 times as great. How this statement consists with the disclosures of that terrible list in *Petrie*, vol. ii, p. 32, I leave to experts to decide. Some day, perhaps, Tables will be constructed exactly conforming to what seem to be Cyclical changes in the rate of Natural Time.

In the case, then, of the alleged Rising of Sothis on 9 Epiphi, True Time was Cyc. Div. $1005\frac{1}{8}$ = A.M. $2465\frac{7}{9}$ = B.C. $1530\frac{5}{9}$, or, of course, A.M. $2466\frac{7}{9}$, $2467\frac{7}{9}$, or $2468\frac{7}{9}$.

In the case of the Rising on 14 Epiphi, it was Cyc. Div. $1026\frac{1}{8}$ = A.M. $2486\frac{1}{8}$, $2487\frac{1}{8}$, $2488\frac{1}{8}$, or $2489\frac{1}{8}$.

In the case of the Rising on 21 Epiphi, it was Cyc. Div. $1054\frac{4}{9}$ = A.M. $2514\frac{4}{9}$, $2515\frac{4}{9}$, $2516\frac{4}{9}$, or $2517\frac{4}{9}$.

In the case of the Rising on 28 Epiphi, it

was Cyc. Div. $1082\frac{3}{6}$ = A.M. $2542\frac{3}{6}$, $2543\frac{3}{6}$, $2544\frac{3}{6}$, or $2545\frac{3}{6}$.

Adding now, to each of these results, by way of restoration, the 9 years of which the Calendar was deprived by the Scribes, we get—

9 Epiphi (Amenhotep I) A.M. $2474\frac{7}{9}$, $2475\frac{7}{9}$, $2476\frac{7}{9}$, or $2477\frac{7}{9}$.

14th Epiphi (Thothmēs I), $2495_{1}^{1}{}_{8}$, $2496_{1}^{1}{}_{8}$, $2497_{1}^{1}{}_{8}$, or $2498_{1}^{1}{}_{8}$.

21st Epiphi (16th y. of Hatshepsūt and 3rd of Thothmēs III), $2523\frac{4}{9}$, $2524\frac{4}{9}$, $2525\frac{4}{9}$, or $2526\frac{4}{9}$.

28th Epiphi (33rd y. of Thothmēs III), A.M. $2551\frac{3}{6}$, $2552\frac{3}{6}$, $2553\frac{3}{6}$, or $2554\frac{3}{6}$.

If these final results are correct they should, in at least some instances, tally with my List of *Hebs*, because we know that in the 16th regnal year of Hatshepsūt, and the 3rd of Thothmēs III, a *Sed Heb* was officially celebrated with unusual splendour (*Petrie*, vol. ii, p. 32), and that, with a celerity of which the Queen seems to have been proud, a magnificent

Oblelisk commemorative of it was erected at Karnak, (*Ib.* pp. 85–87). Well, there *is* a *Sed Heb* on my List, dated A.M. $2524\frac{7}{12}=2525$, which is the 2nd of the 4 dates arrived at *supra* for the Rising on 21st Epiphi. We also know that in the 33rd regnal year of Thothmēs III there was celebrated a *Hunti Heb* which appears on my List under the year A.M. 2555, the last of the 4 years arrived at *supra* for the Rising on 28th Epiphi. *Therefore the Rising in Thothmēs III's 3rd year took place in* A.M. 2525, *and the Rising in his 33rd year took place in* A.M. 2555.

We are sure of these two, but only because they chance to equate with dates on the List of *Hebs*.

But how about the others? It is obvious that only 1 Sothic Rising in every $30\frac{5}{12}$ years from A.M. 0–1 will equate with some date on the *Heb* List. In all other cases the date will not be found there. True, in each case we have a choice of 4 years. If our method is

sound, one of them must be the right year. In some cases the mention of the king's regnal year enables us to make a specific selection, but in other cases even this guiding datum is absent. What are we to do then? We want to find some working rule; because, when a king's regnal year is not given, we would be able to determine it if we only knew how to pick the correct year out from the 4 that are always available.

For instance, in the case of the Rising said to have occurred on 14 Epiphi, we are not told in what regnal year of Thothmēs I it took place. It is therefore impossible, so far, to fix it. Hence it is also impossible, so far, to determine in what regnal year it occurred. We only know it was in one of the 4 years arrived at *supra*.

In the case of the Rising said to have occurred on 9th Epiphi, true we are given a regnal year—the 9th—but it happens to be a very dubious datum.

Moreover, having regard to the peculiar construction of the list of Risings given by Petrie, wherein, in a series of formal sequences, the sequence 7, 14 occurs twice, the sequence 14, 21, 28 also occurs twice, and the only variations from set form are the "9th" at the beginning and the "22nd" and "29th" at the end, I have a strong suspicion, amounting almost to a certainty, that "9th" regnal year is a mistake for "7th" regnal year. We shall find almost immediately that this suspicion is well founded.

To proceed: why have we a choice of 4 years? It is because 1 Calendar Day corresponds to 4 Cyc. Divs. or years on the 1440 Years' Cycle and to $4\frac{1}{8}$ Cyc. Divs. or Years on the 1460 Years' Cycle. Every $4\frac{1}{8}$ Sothic Cyclical Divisions equate with 4 Calendar Years, and thus P. 1 Thoth, or P. New Year's Day, remains during every stretch of $4\frac{1}{8}$ Cyc. Divs., *i.e.* for 4 Calendar Years, at one particular Calendar Day of the Fixed Clock.

Working, therefore, backwards in stretches of $4\frac{1}{18}$ Cyc. Divs. from A.M. 2555, one of our established equations, we are enabled, as it were, to fix the volatile, to make definite the uncertain. That is to say, we get the following results:—

28 Epiphi A.M. 2555 — Date of *Heb* and Rising in 33rd year of Thothmēs III.

$4\frac{1}{18}$

27 „ „ $2550\frac{7}{18}$

$4\frac{1}{18}$

26 „ „ $2546\frac{6}{18}$

$4\frac{1}{18}$

25 „ „ $2542\frac{5}{18}$

$4\frac{1}{18}$

24 „ „ $2538\frac{4}{18}$

$4\frac{1}{18}$

23 „ „ $2534\frac{3}{18}$

$4\frac{1}{18}$

22 „ „ $2530\frac{2}{18}$

$4\frac{1}{18}$

21 „ „ $2526\frac{1}{18}$

$2525\frac{1}{18}$

$2524\frac{1}{18}$ — Date of *Heb* and Rising in 16th year of Hatshepsūt and 3rd of Thothmēs III.

			$2\frac{1}{36}$	
20	Epiphi	A.M.	$2522\frac{10}{18}$	
			$4\frac{1}{18}$	
19	,,	,,	$2518\frac{9}{18}$	
			$4\frac{1}{18}$	
18	,,	,,	$2514\frac{8}{18}$	
			$4\frac{1}{18}$	
17	,,	,,	$2510\frac{7}{18}$	
			$4\frac{1}{18}$	
16	,,	,,	$2506\frac{6}{18}$	
			$4\frac{1}{18}$	
15	,,	,,	$2502\frac{5}{18}$	
			$4\frac{1}{18}$	
14	,,	,,	$2498\frac{4}{18}$	
			$2497\frac{4}{18}$	Rising in reign of Thothmēs I.
			$2496\frac{4}{18}$	No regnal year given.
			$2495\frac{4}{18}$	
13	,,	,,	$2494\frac{3}{18}$	
			$4\frac{1}{18}$	
12	,,	,,	$2490\frac{2}{18}$	
			$4\frac{1}{18}$	
11	,,	,,	$2486\frac{1}{18}$	
			$4\frac{1}{18}$	
10	,,	,,	2482	
			$4\frac{1}{18}$	
9	,,	,,	$2477\frac{17}{18}$	Rising (A.M. 2478) said to have
			$2476\frac{17}{18}$	occurred in 9th year of Amen-
			$2475\frac{17}{18}$	hotep I.
			$2474\frac{17}{18}$	

			$4\frac{1}{18}$	
8	Epiphi	A.M.	$2473\frac{6}{18}$	
			$4\frac{1}{18}$	
7	,,	,,	$2469\frac{5}{18}$	Rising (A.M. 2470) really in Amenhotep I's 9th year.
			$2468\frac{5}{18}$	
			$2467\frac{5}{18}$	
			$2466\frac{5}{18}$	
6	,,	,,	$2465\frac{4}{18}$	
			$4\frac{1}{18}$	
5	,,	,,	$2461\frac{3}{18}$	
			$4\frac{1}{18}$	
4	,,	,,	$2457\frac{2}{18}$	
			$4\frac{1}{18}$	
3	,,	,,	$2453\frac{1}{18}$	
			$4\frac{1}{18}$	
2	,,	,,	$2449\frac{0}{18}$	
			$4\frac{1}{18}$	
1	,,	,,	$2445\frac{9}{18}$	
			$4\frac{1}{18}$	
30	Paoni	,,	$2441\frac{8}{18}$	

From considerations connected with the foregoing list of Risings back from our fixed point, 28 Epiphi A.M. 2555, to 30 Paoni A.M. $2441\frac{8}{18}$, I conclude, as a working rule, that in cases where no particulars are given as to year

of reign or number of regnal year, the year that should be selected out of any 4 years available is the highest year of the 4.

I shall return to this subject when, in applying my new methods to what we know of Ancient Egyptian History, I take up the task of making detailed adjustments connected with the periods of Senwosri III, Amenhotep I, Thothmēs I, Hatshepsūt, or Maat-kā-rā, Thothmēs II, and Thothmēs III. Now to revert.

I maintain, therefore, that the real and only possible epoch for the COMMENCEMENT OF THE SOTHIC CYCLE OF 1460 YEARS was at the point of Natural Time known as the AUTUMNAL EQUINOX, when P. 1 Thoth, or Progressive New Year's Day, was exactly level with F. 1 Thoth on the Cyclical Clock, on the 4th Day of the opening 1st Year, *i.e.* A.M. 0–1, or our 22nd–23rd September, B.C. 3996.

In the year beginning at that Prime Date, our 19th–20th July (whichever or whatever it

was) was 1st Epiphi on the Fixed Cyclical Clock. In 4 consecutive Divisions of the Sothic Cycle (each Division containing $1\frac{1}{4}$ Spheroidal Subdivisions), *i.e.* during 4 several years, representing altogether $4\frac{1}{4}$ Spheroidal Subdivisions, P. 1 Thoth continued to fall on the 23rd September, and, for those 4 years, 19th–20th July, or other variant (when a so-called Heliacal Rising always took place) = F. 1 Epiphi, continued to fall on P. 1 Epiphi. At the end of those 4 years, however, P. 1 Thoth began, for 4 similar times, to fall annually on, no longer the 23rd, but the 24th September, and accordingly F. 1 Epiphi = 19th–20th of July, or other variant (or the so-called Heliacal Rising of Sirius) began for 4 similar times to fall annually on P. 30 Paoni. This *Pro*gression of the New Year and concurrent *Retro*gression of the Rising went on till the Cycle of 1460 Years was completed, when all dates came round again in the same order, but on a new Cycle, starting

as before with P. 1 Thoth at the Autumnal Equinox.

Proceeding on this revolutionised basis, we ought to find every big and little fact stated on the monuments extricating itself from the existing un-cöordinated collection of data almost automatically, and subsiding gracefully and gratefully into its rightful but long-lost place in the general scheme of things with the most delightful precision.

Should this be the result, it will constitute the best proof possible that my conception of the SOTHIC CYCLE and the HEBS, and not those hitherto held by our Egyptologists, was the conception of that CYCLE and those HEBS held by the Ancient Egyptians themselves, and therefore the only right conception thereof.

I shall now proceed to apply it to a few selected Periods of Ancient Egyptian History.

PART II

1. The 4th Dynasty.

According to Poole (p. 62), B.C. 2352 = A.M. 1652.

According to Dimbleby, A.M. 1798–2082 = B.C. 2198–1914.

According to Budge (p. 251), B.C. 3700 = A.M. 304.

According to Petrie (vol. i, p. 36), B.C. 3998–3721 = True B.C. 3990–3713 = A.M. 6–283.

On p. 61 Poole states that in the commencement of a Great Panegyrical Year, in the 1st Division of the 1st Great Panegyrical Month that was a part of it, offerings were made by a certain person who, it is added, lived in the time of King Nūm-Shūfū or Nūm Khūfū and King Shūfū or Khūfū. Petrie regards them

as probably two names of King Khūfū, and writes them Khnūm-khūf and Khūfū. This was the famous Kheops who built the big Pyramid. Poole identifies it with the time of the two Sūphises of Manētho. It will suffice for my purpose to take it as the time of Khūfū, or Kheops.

In vol. i, p. 253, Petrie says that for all the earlier periods of Egyptian History we have but one check, and that a vague one. It is the date when Epiphi would fall in the reign of Merenrā, 4th king of the 6th Dynasty, as calculated from statements made on a certain occasion by an official named Una (p. 95). I shall consider that later on. Here I propose to show that, from considerations based on the nature of the Great Panegyrical Year, we are able to find our bearings chronologically in regard to an even earlier period than that, namely, this period of King Khūfū that I am now dealing with. However, it was not very much earlier, as there seems to have been a

good deal of overlapping amongst these earlier Dynasties.

Poole, having found that a GREAT PANEGYRICAL YEAR began in the time of Khūfū, wished to ascertain *what particular G.P.Y. it was.* How did he proceed? He tells us on p. 62.

In what he calls the year B.C. 2005, in the reign of Amenemhāt II of the 12th Dynasty, he finds an event (the beginning of the Tropical Cycle) occurring "in the course of the Twelfth Division of the Twelfth G.P.M.," *i.e.* GREAT PANEGYRICAL MONTH. The question, then, was—Of what particular G.P.Y. was that G.P.M. a part?

From what he had thus found, and from "the approximative chronology of the interval from the Sūphises to Amenemhāt II, derived from Manetho and the monuments," he concluded that the "commencement" of the particular G.P.Y. current in Amenemhāt II's reign "fell to have been in the year B.C. 2352,

and the commencement of the preceding one B.C. 2717." These dates were respectively A.M. 1652, and A.M. 1287.

Then, on p. 63, he speaks of the G.P.Y. commencing in B.C. 2717 as the FIRST G.P.Y., and identifies its commencement as the Commencement of the ERA OF MĒNĒS; and of the G.P.Y. commencing in B.C. 2352 as the SECOND G.P.Y., and identifies its commencement as the Commencement of the ERA OF KHŪFŪ. According, therefore, to Poole, the G.P.Y. current in Amenemhāt II's reign was also the 2nd G.P.Y., and Amenemhāt II must have reigned at a time within 365 years (the length of a G.P.Y.) from the Era of Khūfū —to be exact, 347 years from it—for he puts Amenemhāt II at B.C. 2005, or A.M. 1999.

Now, how do these conclusions of Poole consist with the nature of that SOTHIC CYCLE of 1460 Years, originally from A.M. 0–1, of which I have shown the G.P.Y. to have been a vital and organic part?

Taking Poole's own view regarding the approximate period of King Khūfū—namely, A.M. 1652—we are here obviously concerned with the *2nd Sothic Cycle of* 1460 *Years*. Well, Poole (p. 63) speaks of the G.P.Y. commencing in B.C. 2717 as the 1st G.P.Y., and of the G.P.Y. commencing in B.C. 2352 as the 2nd G.P.Y.

But the 1st and the 2nd of *what?*

For the purposes of Chronology—*i.e.* in order to fix a Chronology that is at present exceedingly volatile—in a task where we *must* have some firm vantage-ground on which to base our calculations—it will not do to call these G.P.Y.'s the 1st and 2nd of some imaginary period floating loosely about in the sea of Duration without anything whatever connecting it with NATURAL TIME. They must be the 1st and 2nd G.P.Y.'s *of some Sothic Cycle.*

This particular Cycle, we have just seen, was the 2nd; which, of course, began

immediately on the completion of the first 1460 Years from A.M. 0.

Thus, starting from Prime Date, we get 1460 (1st Sothic Cycle), plus $1\frac{1}{2}$, being the 1st Division (see Poole, p. 61) of the 1st G.P.M. of the 1st G.P.Y. of this 2nd Sothic Cycle. On my Clock, a Cycle=1460 Years; a G.P.Y.=365 Years; a G.P.M.=$30\frac{5}{12}$ Years; a Division=$1\frac{1}{2}$ Years. Thus we arrive at $1461\frac{1}{2}$ Years.

But, according to Poole (p. 63), the Commencement of the 1st G.P.Y. was the Era of Mēnēs. If he was right in saying that, the Commencement of that Era should be A.M. 1460–$1461\frac{1}{2}$; then, on the same basis, the Commencement of the Time of Khūfū should be A.M. 1825–$1826\frac{1}{2}$. But if we accept this, we shall find that we must assign the 4th Dynasty to a period more than a century later than its subsequent fellow-Dynasty, the 6th. That is, while the 6th Dynasty's period is almost certainly A.M. 1687–1885

=B.C. 2309–2111, that of the 4th DYNASTY would work out at A.M. 1796–2080=B.C. 2200–1916!

Therefore, we must take it that Poole is wrong, and that, *not the Commencement of the 1st G.P.Y. of the 2nd Cycle, but the Commencement of the 4th G.P.Y. of the 1st Cycle* must have been the true Commencement of the Era of Mēnēs. It follows that, *not the Commencement of the 2nd G.P.Y. of the 2nd Cycle, but the Commencement of the 1st G.P.Y. of that Cycle* must have been the true Commencement of the Time of Khūfū.

The ERA OF MĒNĒS, therefore, was A.M. 1095=B.C. 2901, and its 1st year was A.M. 1095–1096$\frac{1}{71}$=B.C. 2901–2899$\frac{71}{72}$.

The TIME OF KHŪFŪ was A.M. 1460=B.C. 2536, and its 1st year was A.M. 1460–1461$\frac{1}{71}$ =B.C. 2536–2534$\frac{71}{72}$.

This, then—A.M. 1460–1461$\frac{1}{71}$=B.C. 2536–2534$\frac{71}{72}$—was the period to which we must assign the occasion referred to by Poole,

when a certain person is said to have "made offerings," and to have "lived in the time of King Num-Shufu."

Poole said, it will be remembered, that the G.P.Y. which began in Khūfū's time, and which he wrongly called a 2nd G.P.Y., was also current in the time of Amenemhāt II of the 12th Dynasty. If he was right in thinking that, whether a 1st or a 2nd G.P.Y., it was the *same* G.P.Y., then, as it proves to have really been a 1*st* G.P.Y., I conclude that the one in which Amenemhāt II flourished was the same 1st G.P.Y. of the 2nd Sothic Cycle, *but later on in it.*

Poole's date—B.C. 2352=A.M. 1652—could not possibly have been the Commencement of *any* Sothic Cycle, any more than B.C. 1322 (1320), B.C. 2780, or B.C. 4241 could have been. It was not a 2nd G.P.Y., but plainly the 192nd year of the 1st G.P.Y. of the 2nd Sothic Cycle. So also his prior date—B.C. 2717=A.M. 1287—could not possibly have been any such

Commencement either. It was not a 1st G.P.Y. at all, but the 192nd year of the 4th G.P.Y. of the 1st Sothic Cycle.

Poole, and some others, are discovered unconsciously wandering in this wilderness of error, not because their own calculations are wrong, once the basis from which they start is granted, but because they take their bearings from a so-called Sothic Cycle which is not a Sothic Cycle at all, but an arbitrary Cycle which is floating about in the skies of their own mentality, with no relation to anything except the nearest similarly capricious cloud.

On p. 41 of his *Short History*, Professor Budge says that Khūfū cannot have reigned much longer than 20 years. Breasted (p. 597) gives him 23 years. Petrie (vol. i, p. 37) allows him 63 years. All knowledge about this celebrated personage, therefore, seems very indefinite.

Taking the longest of these different

estimates, and assuming that this 63 years was in and near the 1st G.P.M. of $30\frac{5}{12}$ years above referred to, I take it roundly that Khūfū reigned about A.M. 1460–1523=B.C. 2536–2473. Thus, with Shaarū (29 years) as its first king, the 4th Dynasty began about A.M. 1431=B.C. 2565, and ended with Aimhetep, after a total period of 284 years, about A.M. 1715=B.C. 2281.

I accordingly find the period of the 4th DYNASTY to have been A.M. 1431–1715=B.C. 2565–2281. Shepseskāf, the 6th king of this DYNASTY, seems by the above reckoning to have reigned about A.M. 1671–1692=B.C. 2325–2304. According to Breasted (*Ancient Records*, vol. i, p. 67), he celebrated a "Seshed Feast" in his first regnal year. If this was the same thing as a SED HEB, it was no doubt the Ordinary Festival for A.M. $1672\frac{1}{2}$, No. 19 in my *List of Hebs, post.* If so, this will be the earliest SED HEB that has been identified so far. Moreover, it fixes Shepseskāf's first

regnal year at A.M. 1673=B.C. 2323, and thus gives us a base from which to make other adjustments. We shall find in due course that these SED and HUNTI HEBS—of which there is a long and impressive vista, in successive periods of exactly $30\frac{1}{2}$ years—clinch our calculations from time to time in the most delightful way; in fact, they operate as a splendid Chronological Control.

According to Poole (p. 82), the 4th Dynasty was somewhat earlier than the 6th, which was about contemporaneous with the 11th, and with the beginning of the 12th.

According to Dimbleby, Dynasties from 4th to 15th were all contemporaneous at some part, often during the greater part, of their periods.

Poole, speaking of his unmoored year B.C. 2717, which he identifies as the Era of Mēnēs, says, "That this was the First G.P.Y. is proved by the characteristics which it possesses; for it commenced in a year in which the manifestation of Sothis fell in the first month of the

Vague Year, and was therefore celebrated on the first day of that month" (p. 63).

The beginning of a G.P.Y. (of which there are 4 in every Sothic Cycle) is always a year that begins, the 1st at the Autumnal Equinox, the 2nd at the Winter Solstice, the 3rd at the Vernal Equinox, and the 4th at the Summer Solstice, and in which Sirius rises at a time *regulated by the fact* that at the commencement of the Cycle, and therefore of the 1st G.P.Y., Progressive 1st Thoth, or Progressive New Year's Day, falls exactly on Fixed 1st Thoth. When P. 1st Thoth is at the Autumnal Equinox, at the opening of the 1st year of any Cycle, the Manifestation or Rising occurs that year exactly 10 months subsequently, *i.e.* on 1st F. Epiphi, or our 20th July. When, 365 years afterwards, in the course of the Cycle, at the commencement of the 2nd G.P.Y., P. 1st Thoth reaches the Winter Solstice, the Rising occurs 7 months afterwards. When, another 365 years afterwards, at the

commencement of the 3rd G.P.Y., P. 1st Thoth reaches the Vernal Equinox, the Rising occurs 4 months subsequently. When, yet another 365 years afterwards, at the commencement of the 4th G.P.Y., P. 1st Thoth reaches the Summer Solstice, the Rising occurs 1 month subsequently. Then, for the first time, at the end of the ensuing 121¾ years, P. 1st Thoth falls exactly on F. 1st Epiphi, and Progressive New Year's Day and the Rising coincide. That happens like this once, and once only, in the Cycle. But obviously it is *not*, as Poole says, a characteristic marking the 1st G.P.Y. It marks a stage in the early part of the, and every, 4th G.P.Y. If it marked Poole's B.C. 2717, he had clearly got hold of the wrong year, but it could not have marked it for B.C. 2717 was A.M. 1287. As such, it was not only 192 years past the commencement of the 4th G.P.Y. of its Cycle, but it was 70¼ years past the time of the Heliacal Rising's coincidence with the

Progressive New Year. As already observed, there was another kind of Heliacal Rising of Sirius which the Egyptians observed every 162 years, but that seems to have been connected with the Eclipse Cycles of 18, 54, and 649 years.

Let us now gather up our results so far.

(*a*) ERA OF MĒNĒS (First Year), A.M. 1095–$1096\frac{1}{2}$, or B.C. 2901–$2899\frac{1}{2}$.

(*b*) 4TH DYNASTY, A.M. 1431–1715 = B.C. 2565–2281, and therewith the means of forming, prior to calculations, an approximate idea of the periods of any Dynasties that were contemporaneous with it.

(*c*) ERA OF KHŪFŪ (First Year), A.M. 1460–$1461\frac{1}{2}$ = B.C. 2536–$2534\frac{1}{2}$.

(*d*) A complete Line of all the GREAT PANEGYRICAL YEARS, from the PRIME DATE to the first few centuries of the CHRISTIAN ERA. They must be read as *completed* years.

No. of G.P.Y.	A.M. 0, 1 Thoth.	
1	„ 365 = B.C. 3631	...Opening G.P.Y. of 1st Sothic Cycle.
2	„ 730 = „ 3266	
3	„ 1095 = „ 2901	
4	„ 1460 = „ 2536	...Close of 1st Sothic Cycle.
1	„ 1825 = „ 2171	...Opening G.P.Y. of 2nd Sothic Cycle.
2	„ 2190 = „ 1806	
3	„ 2555 „ 1441	
4	„ 2920 „ 1076	Close of 2nd Sothic Cycle.
1	„ 3285 „ 711	.Opening G.P.Y. of 3rd Sothic Cycle.
2	„ 3650 „ 346	
3	„ 4015 „ ~~101~~	
4	„ ~~4380~~ ~~A.M. 4160 A.D. 181~~	...Close of 3rd Sothic Cycle.
1	„ 4745 A.L. 746/7	Opening G.P.Y. of 4th Sothic Cycle.

(And so on up to date.)

(*e*) A complete Line of all the SED (Ordinary) and HUNTI (Quadruple) HEBS, or RELIGIOUS FESTIVALS, from the 1st SED HEB in A.M. $1125\frac{3}{12}$, or B.C. $2870\frac{7}{12}$, at the beginning of the Era of Mēnēs, up to the opening years of the

20th Dynasty, which will suffice for my present purposes. The reader can easily carry them on further for himself, to any period he desires, by adding the required number of periods of $30\frac{5}{12}$. Dimbleby numbered his list of wrong periods (round periods of 30 and 120 years) from A.M. 0; but in this he obviously erred, as they did not in fact commence till the commencement of civil life in the ERA OF MĒNĒS.

SED.	HUNTI.	A.M.	B.C.
1		$1125\frac{5}{12}$	$2870\frac{7}{12}$
2		$1155\frac{5}{6}$	$2840\frac{1}{4}$
3		$1186\frac{1}{4}$	$2809\frac{3}{4}$
4	1	$1216\frac{2}{3}$	$2779\frac{1}{3}$
5		$1247\frac{1}{12}$	$2748\frac{1}{2}$
6		$1277\frac{1}{2}$	$2718\frac{1}{2}$
7		$1307\frac{11}{12}$	$2688\frac{1}{12}$
8	2	$1338\frac{1}{3}$	$2657\frac{2}{3}$
9		$1368\frac{3}{4}$	$2627\frac{1}{4}$
10		$1399\frac{1}{6}$	$2596\frac{5}{6}$
11		$1429\frac{7}{12}$	$2566\frac{5}{12}$
12	3	1460	2536
13		$1490\frac{5}{12}$	$2505\frac{7}{12}$
14		$1520\frac{5}{6}$	$2475\frac{1}{6}$
15		$1551\frac{1}{4}$	$2444\frac{3}{4}$
16	4	$1581\frac{2}{3}$	$2414\frac{1}{3}$.

SED.	HUNTI.	A.M.	B.C.
17		1612 1/12	2383 1/12
18		1642 1/2	2353 1/2
19		1672 1/12	2323 1/12
20	5	1703 1/3	2292 2/3
21		1733 3/4	2262 1/4
22		1764 1/6	2231 5/6
23		1794 7/12	2201 5/12
24	6	1825	2171
25		1855 5/12	2140 7/12
26		1885 5/6	2110 1/6
27		1916 1/4	2079 3/4
28	7	1946 2/3	2049 1/3
29		1977 1/12	2018 1/12
30		2007 1/2	1988 1/2
31		2037 1/12	1958 1/12
32	8	2068 1/3	1927 2/3
33		2098 3/4	1897 1/4
34		2129 1/6	1866 5/6
35		2159 7/12	1836 5/12
36	9	2190	1806
37		2220 5/12	1775 7/12
38		2250 5/6	1745 1/6
39		2281 1/4	1714 3/4
40	10	2311 2/3	1684 2/3
41		2342 1/12	1653 1/12
42		2372 1/2	1623 1/2
43		2402 1/12	1593 1/12
44	11	2433 1/3	1562 2/3
45		2463 3/4	1532 1/4

SED.	HUNTI.	A.M.	B.C.
46		$2494\frac{1}{6}$	$1501\frac{5}{6}$
47		$2524\frac{7}{12}$	$1471\frac{5}{12}$
48	12	2555	1441
49		$2585\frac{5}{12}$	$1410\frac{7}{12}$
50		$2615\frac{5}{6}$	$1380\frac{1}{6}$
51		$2646\frac{1}{4}$	$1349\frac{3}{4}$
52	13	$2676\frac{2}{3}$	$1319\frac{1}{3}$
53		$2707\frac{1}{12}$	$1288\frac{11}{12}$
54		$2737\frac{1}{2}$	$1258\frac{1}{2}$
55		$2767\frac{11}{12}$	$1228\frac{1}{12}$
56	14	$2798\frac{1}{3}$	$1197\frac{2}{3}$
57		$2828\frac{3}{4}$	$1167\frac{1}{4}$
58		$2859\frac{11}{12}$	$1136\frac{5}{6}$
59		$2889\frac{1}{2}$	$1106\frac{5}{12}$
60	15	$2919\frac{11}{12}$	1076
61		$2950\frac{1}{3}$	$1045\frac{7}{12}$
62		$2980\frac{3}{4}$	$1015\frac{1}{6}$

N.B.—The line of periods of $30\frac{5}{12}$ years each, prior to the ERA OF MĒNĒS and starting from A.M. $30\frac{5}{12}$, will be found on the Sothic Cyclical Clock.

2. THE 6TH DYNASTY.

Period according to different authorities.

Petrie (vol. i, p. 86): A.M. 501–669 = B.C. 3503–3335.

Brugsch (p. xxi): A.M. 704–938 = B.C. 3300–3066.

Breasted (p. 597): A.M. 1379–1529 = B.C. 2625–2475.

Dimbleby: A.M. 1962–2227 = B.C. 2034–1769.

Preliminary hypothesis as to period.

I have arrived at A.M. 1431–1715=B.C. 2565–2281 as the period of the 4th DYNASTY. Both Dimbleby and Poole put it earlier than the 6th Dynasty. Therefore, taking Dimbleby's and even Breasted's computations for the 6th Dynasty as preferable to Brugsch's and Petrie's—which I regard as absolutely impossible, and startlingly remote from the probable—we may assume, as a working hypothesis, that we are dealing with a Dynasty whose period was perhaps at the end of the 1st Sothic Cycle of 1460 Years, but more probably partly in the 1st Great Panegyrical Year of the 2nd Sothic Cycle, and partly in the 2nd G.P.Y. of that Cycle. Our problem is to find which of these 3 possible periods is the correct one.

Merirā, or Pepi I, the 3rd king, is said to have celebrated a SED HEB in his 18th year (*Petrie*, vol. i, p. 93), *Sed*, I understand, means "Tail," and the Festival was so called because it was originally in celebration of the heirship of the Crown Prince, who was figuratively regarded as the "tail" of the Royal "Lion." This SED probably really relates to Pepi II, as we shall see presently.

Period of Pepi I.

Petrie (vol. i, p. 89): A.M. 537–557 = B.C. 3467–3447.

Breasted does not specially assign him any period.

Pepi I reigned 21 years (*Petrie*, vol. i, p. 86), and was succeeded by Merenrā, who reigned 5 years.

Now, in Merenrā's reign there was a high official named Una, or Uni, who, being commissioned to bring some alabaster to the Pyramids, quarried it at Hatnūb in 17 days of the month of Epiphi, and who reports

that nevertheless he could not float it down the Nile in the great rafts originally intended, in time to benefit by the Inundation, as the waters had subsided, or were subsiding. Petrie puts the subsidence at about 5th November, the departure from Hatnūb, at 28th October, and the 17 days of Epiphi, he says, take us back to 11th October. Hence, according to him, Epiphi fell within 6 days of 5th October–5th November. This date, he asserts, would be that of Epiphi at about B.C. 3350=A.M. 654, if we reckon the 1460 years' period back from A.D. 139. I have already commented on this last-mentioned date and its fellows as starting points for calculations connected with the Sothic Cycle. However, he thereby obtains B.C. 3410=A.M. 594 as the date of the beginning of the 6th Dynasty, with an uncertainty, he adds, of at most 50 to 100 years. Over 800 years prior to the commencement of the Era of Mēnēs!

Let us test Petrie's argument.

Una works at the quarries from 14th to 30th, inclusive, of Epiphi. Then on 1st Mesorē (28th October) he leaves Hatnūb. He travels by raft from then till 9th Mesorē (5th November), *i.e.* 9 days, both inclusive, and finds the waters fallen or falling. We thus get the following parallel :—

1	Epiphi	=	28 September	21	Epiphi	=	18 October
2	„		29 „	22	„		19 „
3	„		30 „	23	„		20 „
4	„		1 October	24	„		21 „
5	„		2 „	25	„		22 „
6	„		3 „	26	„		23 „
7	„		4 „	27	„		24 „
8	„		5 „	28	„		25 „
9	„		6 „	29	„		26 „
10	„		7 „	30	„		27 „
11	„		8 „	1	Mesorē		28 „
12	„		9 „	2	„		29 „
13	„		10 „	3	„		30 „
14	„		11 „	4	„		31 „
15	„		12 „	5	„		1 November
16	„		13 „	6	„		2 „
17	„		14 „	7	„		3 „
18	„		15 „	8	„		4 „
19	„		16 „	9	„		5 „
20	„		17 „				

That is, according to Petrie, Epiphi fell on that occasion between 28th September and 27th October, both inclusive.

It must be remembered that the Epiphi spoken of by Una was Progressive Civil Epiphi, not the Fixed Epiphi on the Clock of the Natural Year. At the opening of every Sothic Cycle of 1460 Years, but only then, *i.e.* when P. 1st Thoth is exactly level with F. 1st Thoth at the Autumnal Equinox, P. Epiphi falls at F. Epiphi. Every 1 day's remove further on, however, means an advance of 4 years in the Cycle. Hence, by making P. 1st Epiphi coincide with F. 28th September, or the greater part of F. Thoth and a small portion of F. Paopi, Petrie has moved P. 1st Epiphi from its original position (level with F. 20th July) through 12 days of July, 31 days of August, and 28 days of September=71 days in all. This, multiplied by 4,=284 days, which means that Una was then in the 284th year of *some* Great Panegyrical

Year. Plainly we have a choice of 3 G.P.Y.'s.

The 284th year of the 4th G.P.Y. of the 1st Sothic Cycle of 1460 Years was A.M. 1379 =B.C. 2617.

Of the 1st G.P.Y. of the 2nd Cycle, the 284th year was A.M. 1744=B.C. 2252.

Of the 2nd G.P.Y. of the 2nd Cycle, the 284th year was A.M. 2109=B.C. 1887.

It is obvious that it will make a very great difference which of these years we decide to select. Only one of them can be the correct one. Let us analyse them, each in turn.

In A.M. 1379, 1st Thoth P. fell on 10th Mesorē, or our 28th August. Therefore P. Epiphi then fell in July and a few days of June. That could therefore not be the period we want.

A.M. 1744 was 1460 plus 284. In the 284th year of the 2nd Cycle, P. 1 Thoth fell on 10th Athyr=1st December. P. Epiphi, therefore, coincided almost exactly with the month of

F. October. Now, this is the very position we are looking for. Let us, however, first test the remaining year A.M. 2109.

That was 1460 plus 649. In the 649th year of the 2nd Sothic Cycle, P. 1 Thoth fell on 10th Mechir=1st March. P. Epiphi therefore fell in January. This is clearly no use to us. The year we must go by is obviously A.M. 1744.

Here, however, to be quite exact, we must make a little correction. To get Cyclic years Petrie multiplies his days by 4. We must multiply them by $4\frac{1}{8}$. 71 days multiplied by $4\frac{1}{8}$, means that Una was really in the $287\frac{1}{8}$th year of *some* G.P.Y.

Taking Petrie's calculation we chose the year A.M. 1744, as being the 284th year of the 1st G.P.Y. of the 2nd Cycle. Hence, we must now chose the $287\frac{1}{8}$th year of that G.P.Y. That year is A.M. $1747\frac{1}{8}$, or, say, A.M. 1748.

Thus, then, we find that though Petrie is

practically right in his synchronisation of the months, yet his being right in this does not validate his conclusion that his argument brings us to B.C. 3350 as the time when Una was quarrying for Merenrā.

Besides, we know that it is always, and can only be, when P. 1 Thoth in its career round the Cycle, is pointing to early F. Athyr, or beginning of our December, *i.e.* when it is in the last stage of the Cycle's 1st G.P.Y., or stretch of 365 Years, and is approaching the Winter Solstice, that P. Epiphi can and does ever coincide with our October.

Well, were these conditions *those of* B.C. 3350 ?

That was A.M. 654. A.M. 654 was when P. 1 Thoth, in course of its Cyclic round, was 289 years along the path of the 2nd G.P.Y. In other words, P. 1 Thoth was then staging, nowhere near the Winter Solstice, but far beyond it, at a point somewhere in F. Mechir =our March.

Having selected Year A.M. 1747⅛, let us now proceed to apply it. Merenrā reigned at least 5 years (*Ancient Records*, p. 145). Una's commission was probably in the 1st regnal year, as we know that on the accession of an Egyptian king one of the first things that he attended to was the construction of his inevitable "long home," or tomb, where, as it were, he would await his next period of incarnation after about 1500 years. Merenrā's reign, therefore, was probably A.M. 1747⅛–1751⅛.

How does this conclusion consist with the necessities arising out of the known facts of the reign of his immediate successor, Nefer-kā-rā, or Pepi II? It harmonises exactly.

Pepi II came to the throne as a child of 6, and reigned for over 90 years (Breasted, p. 143; Petrie, vol. i, p. 102). At p. 93 of the same vol. Petrie tells us that at Hammamat there are many inscriptions, the largest of

which records a *Sed Heb* celebrated by Pepi I in his 18th regnal year. This must surely relate to Pepi II, not to Pepi I? In *Ancient Records*, pp. 136, 137, §§ 296–298, the inscription is noticed, and the reference to the "18th occurrence" is described as being below the reliefs, in the inscription of the officers of an expedition. One of the reliefs has the words, "First occurrence of the Sed Jubilee." Then (pp. 139, 140, §§ 304, 305) another inscription is noticed, also purporting to relate to the "First occurrence of the Sed Jubilee," but dated in the "year of the 25th numbering." As Breasted remarks, "On any theory of the Sed Jubilee this date is in glaring contradiction" of the other. I submit that the one stated to have been in the 18th year was really Pepi II's Festival. In any case, a *Sed Heb* fell due precisely in what would have been the 18th regnal year of Pepi II. It was No. 22 Ordinary, in A.M. $1764\frac{1}{8}$=B.C. $2231\frac{5}{8}$. Exactly $30\frac{3}{4}$ years later, in his 49th regnal

year, he celebrated another of the same kind in A.M. $1794\frac{7}{19}$ = B.C. $2201\frac{3}{19}$. Exactly another $30\frac{3}{19}$ years afterwards, in his 80th ~~regnal~~ year, he celebrated yet another that was not Ordinary. It was the 24th *Heb* in my list, but the 6th Quadruple, or *Hunti*, falling in A.M. 1825 = B.C. 2171.

Thus, allowing 36 years for its first two kings, Teta and Aty (*Petrie*, vol. i, p. 86), I find to a moral—I might almost say to an astronomical, geometrical, and mathematical—certainty, that this Dynasty began about A.M. $1684\frac{7}{8}$ = B.C. $2311\frac{1}{8}$, and, having flourished about 198 years altogether, ended about A.M. $1882\frac{7}{8}$ = B.C. $2311\frac{1}{8}$. In this result we have a solid basis on which to build the rest of our inferences and conclusions; and the first use I find for it is to notice that it confirms my conclusion regarding the period of the 4th Dynasty, which I fixed by proceeding on an altogether different line of thought.

Re-constructing the Dynasty, we get—

Teta . . .	30 years . . .	A.M.	$1684\frac{7}{18}$–$1714\frac{7}{18}$
Aty . . .	6 „ . . .	„	$1714\frac{7}{18}$–$1720\frac{7}{18}$
Pepi I . .	21 „ . . .	„	$1720\frac{7}{18}$–$1747\frac{7}{18}$
Merenrā I .	5 „ . . .	„	$1747\frac{7}{18}$–$1751\frac{7}{18}$
Pepi II .	90 x „ . . .	„	$1751\frac{7}{18}$–$1841\frac{7}{18}$–x
Merenrā II .	1 „ . . .	„	?
Nefer-kā-rā .	? „ . . .	„	?
Men-kā-rā (Nitōkris)	12 „ . . .	„	$1870\frac{7}{18}$–$1882\frac{7}{18}$
	198 ?		

Period of Dynasty: A.M. $1684\frac{7}{18}$–$1882\frac{7}{18}$=B.C. $2311\frac{1}{18}$–$2113\frac{1}{18}$.

3. The 12th Dynasty.

Period according to authorities.

Petrie (vol. i, p. 147): A.M. 1226–1499=B.C. 2778–2565.

Brugsch (p. xxii.): A.M. 1538–1738=B.C. 2466–2266.

Breasted (pp. 598–9): A.M. 2004–2216=B.C. 2000–1788.

Dimbleby: A.M. 2006–2162=B.C. 1990–1834.

Comparison with 6th Dynasty.

According to Poole, the 12th Dynasty began

about the time when the 6th Dynasty ended (p. 159). Petrie's, Brugsch's, and Breasted's periods for the 6th Dynasty show that they also thought the 12th Dynasty began after the end of the 6th, by some $4\frac{1}{2}$–6 centuries. Budge merely assigns about B.C. 2400 as the period of the 12th Dynasty (p. 252). Dimbleby held that not only did the 6th Dynasty precede the 12th by 46 years, but it also continued to flourish for 65 years after the 12th had ended. He thus holds that they were contemporary as long as the 12th lasted.

I have just assigned the 6th Dynasty to A.M. $1684\frac{7}{8}$–$1882\frac{7}{8}$ = B.C. $2311\frac{1}{8}$–$2113\frac{1}{8}$.

Thus, while Petrie and Brugsch are remote in their estimates, Dimbleby and Breasted are nearer, and practically agree.

Which of all these estimates is the right one? Is any of them the right one?

Some doubt seems to exist as to whether Amenemhāt I should be regarded as a king of the 12th Dynasty at all, or whether he should

be assigned to the 11th Dynasty. As to this, Poole probably gives the correct view. According to him (pp. 21, 141 *et seq.*), Amenemhāt I did not, strictly speaking, belong to either Dynasty. Either that, or he belonged to both. He was originally established as vassal ruler of Upper Egypt by the then supreme Pharaoh, Neb-taui-rā, or Mentu-hotep II (Neb-tete-rā, or Munt-hotep), 5th king of the 9th Dynasty. This connected him in a manner with the 11th Dynasty; but anarchy arose, and he was several times dethroned and restored. Finally he seems for 16 (Breasted says 10) years to have been co-regent with Usertesen, Senusert, or Senwosri I, the really first king of the 12th Dynasty.

Dimbleby states that there was a Quadruple Festival (the 17th since A.M. 0) connected with the Sothic Cycle of 1460 years celebrated in the 4th regnal year of Senwosri I. In this he is wrong. A *Sed Heb*, or Ordinary Festival, was celebrated in that king's 3rd year, as we

shall see presently. Dimbleby's 17th Quadruple means A.M. 2040, but it is impossible to equate this with any of the *Hebs* on my list, because Dimbleby and I construct our lines on different bases—he on a 120 years, I on a $121\frac{3}{4}$, basis. It shows, however, one thing which I regard as very important, and that is that, without any thought of G.P.Y.'s in his mind, he is speaking of a time which must have been in the 2nd G.P.Y. of the 2nd Sothic Cycle. Process: from 2040 subtract 1460, the 1st Cycle. The remainder is 590 of the 2nd Cycle. Now subtract 365, the 1st G.P.Y. of that 2nd Cycle. The remainder is 225 years, part of the 2nd G.P.Y.

Now, I have already committed myself to the view that the G.P.Y. in which the 12th Dynasty must have flourished was, *not* a 2nd, but the 1st G.P.Y. of the 2nd Cycle, and *well on in it*. Hence, as Dimbleby is clearly wrong regarding his co-called 17th Quadruple Festival in A.M. 2040, he should also be wrong in his

placement of the reign of Senwosri I in the 2nd G.P.Y. of the 2nd Cycle. We shall soon see.

In *Ancient Records*, § 42, p. 28, Breasted gives us the momentous information that among the Kahūn Papyri there is a letter from a Priest to his subordinates, notifying them in the 120th year of the 12th Dynasty (which, according to Breasted's figures, indicates the reign of Senwosri III) that the Feast of the Rising of Sothis would occur on "the 15th of the 8th month," which I take to be Pharmuthi. In an article on "Egypt" in the *Encyc. Brit.*, 11th edition, vol. 9, p. 79, we get the further fact that the phenomenon occurred in Senwosri III's 7th regnal year.

Of one thing, at least, we may be very certain. This Rising could not possibly have been one of the kind that happened only once in a Sothic Cycle, *i.e.* when Progressive 1st Thoth, or the Progressive New Year, coincided with Fixed 1st Epiphi at point ~~1210$\frac{1}{2}$~~ on the

Cycle; for the first happened in A.M. 1216⅔ =B.C. 2770½, and the next occasion was not till A.M. 2676⅔=B.C. 1310½.

In a footnote to p. 28 Breasted states that Temple entries from the same Papyri recording offerings made at the Sothis Feast, are dated the next day, *i.e.* I suppose, the 16th of "the 8th month." This, however, does not advance us, as a Sothis Feast was not the same function as a *Sed* or *Hunti Heb.* I have already dealt with Breasted's method of fixing this event at B.C. 1880. Curiously enough, that method amounts to the same thing as—what does the reader think? To something which reveals quite clearly that Breasted has been basing himself on the old Cycle of 1440 Years which the Ancient Egyptians carefully discarded! For if we count the years from 1st Epiphi, on the basis of this discarded Cycle, when we come to 15th Mechir we come to exactly Breasted's 900 years! What he really has proved, therefore, though he did not know

it, is that his point of Coincidence between the Calendar and Nature, *i.e.* B.C. 2780, is indeed metaphysically placed in his own mind, but nowhere in Time, certainly nowhere on the Clock; that his basic Cycle is the wrong one; that 1st Epiphi, or my Cyclical Division 1216⅔, is not the "beginning"; that Mechir is not "the 8th month"; and that B.C. 1880 is a chimaera.

As already stated, the true date of the Rising in Senwosri III's 7th regnal year was any one of the dates A.M. 1768⅔, 1769⅔ 1770⅔ and 1771⅔=B.C. 2227⅔ 2226⅔ 2225⅔ and 2224⅔. In arriving at this we ought to have arrived at the 120th year of the 12th Dynasty.

We may now proceed to attempt a reconstruction of the Dynasty, going by either Petrie's or Breasted's figures for each reign. It matters little which we rely on, as, excluding co-regencies, both authorities give Amenemhāt I 20, Senwosri I 42, and Amenemhāt II 32 years=94 years. Unfortunately the length

of Senwosri II's reign is not known with any certitude. It is, in fact, the weak link in the chain so far made by Egyptologists. But apparently he has been allowed about 19 years.

It may be remembered that some time back I decided to adopt the working rule that whenever we have 4 available years for a Sothic Rising, with nothing to indicate which one of them is the right year, the one to select is preferably the highest of the 4. Let us, therefore, consistently with this rule, select A.M. 1771⅔ as Senwosri III's 7th regnal year. This would make his 1st regnal year A.M. 1765⅔.

Senwosri II's period would then be A.M. 1746⅔–1765⅔.

Amenemhāt II's period would be A.M. 1711⅓–1746⅔.

Senwosri I's period would be A.M. 1666⅔–1711⅓.

His 3rd regnal year would, therefore, have

been A.M. $1668\frac{2}{3}$. Our task now is, not only to determine the proper place of Senwosri III's 7th regnal year on the Sothic Cycle, but also to see that Senwosri I's 3rd regnal year, when we have decided upon it, is consistent with the requirements of my *List of Hebs*.

First, let us see whether A.M. $1668\frac{2}{3}$ is on that *List*.

No, it is not. The nearest SED HEB was $4\frac{25}{30}$ years later, *i.e.* it was No. 19 on the *List* —A.M. $1672\frac{1}{2}$.

Now, I find that in the 3rd year of his reign, in the 3rd month of the 1st season, Senwosri I "was taking thought in an excellent matter." "I will make a work, namely, a great house for my father Atūm." In other words, he decided to build a Temple to the Sun-God at Heliopolis (*Ancient Records*, §§ 498–506, pp. 240–245; *Petrie*, vol. i, p. 157; *Budge*, p. 55; *Brugsch*, pp. 58, 59). On an Obelisk commemorating the laying of the Foundation,

it is recorded that the work was executed "at the beginning of a 30 years' cycle" (*Brugsch*, p. 59). HEBS, be it remarked, were celebrations of *completed* periods. Here the record speaks of the *beginning* of one of these periods. Its reference to it as a "30 years' cycle," I regard as merely a rough-and-ready allusion, its true fractional nature being taken as known, at least to the educated classes. It was, therefore, an appellative, not a descriptive expression.

From this it is clear that there is no reason whatever why A.M. 1668$\frac{3}{5}$ should be on the *List of Hebs* at all. No HEB was being celebrated or was due then. In this 3rd regnal year—which we are provisionally assuming to have been A.M. 1668$\frac{3}{5}$—Senwosri I only *decided* to build the Temple. Such a great structure would certainly have taken many years to erect. Even the clearing of the site and the laying of the Foundation would have required several years. Then the inscription on the

Obelisk records that the completion of this *Foundation-work* was at "the beginning of a 30 years' cycle"=the beginning of a HEB PERIOD of $30\frac{5}{12}$ years.

Therefore we now have it that the *decision to build* was presumably in A.M. $1668\frac{2}{5}$, and the *completion of the Foundation-work* was presumably soon after A.M. $1672\frac{1}{2}$. That is to say, it was either in Mesorē, the last $\frac{1}{12}$th of A.M. 1673, or it was in Thoth, the first $\frac{1}{12}$th of A.M. $1674=4\frac{3}{10}$ years after A.M. $1668\frac{2}{5}$. Let us assume that it was at this last-mentioned date. How does this work out?

Amenemhāt I	30 years
Senwosri I	45 „
Amenemhāt II	35 „
Senwosri II	19 „
Senwosri III	7 „
	136
Co-regencies	—15
	121st year of the Dynasty.

This is so very near the mark that obviously

the 1 year in excess is probably susceptible of elimination by a little adjustment.

Suppose, therefore, we assume that the completion of the Foundation-work took, not $4\frac{31}{36}$ years, as above, but only $3\frac{31}{36}$ years, ending A.M. $1673\frac{1}{2}$, which seems indeed a more reasonable time. Senwosri I's first regnal year would then have been, not A.M. $1666\frac{2}{5}$, as above, but A.M. $1667\frac{2}{5}$.

Thus we obtain the following final reconstruction of the Dynasty :—

Amenemhāt I	30 years .	A.M. $1637\frac{2}{5}$–$1667\frac{2}{5}$
Senwosri I	45 ,, .	,, $1667\frac{2}{5}$–$1712\frac{2}{5}$
Amenemhāt II	35 ,, .	,, $1712\frac{2}{5}$–$1747\frac{2}{5}$
Senwosri II	18 ,, .	,, $1747\frac{2}{5}$–$1765\frac{2}{5}$
Senwosri III	38 ,, .	,, $1765\frac{2}{5}$–$1803\frac{2}{5}$
Amenemhāt III	48 ,, .	,, $1803\frac{2}{5}$–$1851\frac{2}{5}$
Amenemhāt IV	9 ,, .	,, $1851\frac{2}{5}$–$1860\frac{2}{5}$
Sebeknefrurē	4 ,, .	,, $1860\frac{2}{5}$–$1864\frac{2}{5}$
	227	
Co-regencies	—15	
	212	

By these figures Senwosri I's 3rd year was

A.M. 1669⅔, and Senwosri III's 7th regnal year works out at 135—15 for co-regencies =exactly the 120th year of the Dynasty!

All the conditions of the problem, as laid down by the records and by the nature of the Sothic Cycle, have now been completely satisfied. Senwosri I's regnal period, at A.M. 1667⅔–1712⅔, is consistent, not only with the inscription on the Obelisk, but also with the *List of Hebs*. Senwosri III's regnal period, at A.M. 1765⅔–1803⅔, consists with the recorded date of the Sothic Rising that took place in his 7th regnal year, and the latter is shown to have been exactly the 120th year of the Dynasty, as stated in the Kahūn Papyrus. And incidentally the length of Senwosri II's regnal period, hitherto uncertain, has been definitely fixed at 18 years.

I think I am now entitled to say that an effective portion of the magic formula, *Open Sesamé!* has been legitimately uttered, that my Triple Key is beginning to turn, that the

lock of the door of the CHAMBER OF MYSTERY is yielding, and that there is good reason to hope that when we come to apply my methods to the era of the famous 18th Dynasty we shall be able to open the door itself, for all to enter who will.

Period of Dynasty: A.M. $1637\frac{2}{5}$–$1864\frac{2}{5}$ = B.C. $2358\frac{1}{5}$–$2131\frac{1}{5}$.

Thus, to our astonishment, Poole turns out to have been quite correct, when he said that the G.P.Y. in which Amenemhāt II flourished, and the G.P.Y. which commenced in the age of Khūfū, were identical. Amenemhāt II's date, we see, was A.M. $1712\frac{2}{5}$–$1747\frac{2}{5}$. A.M. 1712 consists of 1460 (the 1st Sothic Cycle) plus 252 years of the 1st G.P.Y. of the 2nd Cycle.

Thus, too, I myself was right in my anticipation that it would turn out to be the same 1st G.P.Y. of the 2nd Cycle, *but at a later stage.* It is, at first sight, alarming to find the results of my calculations regarding the period of

this Dynasty differing so greatly from those of authorities like Breasted, Petrie, and Dimbleby, and actually fixing the 12th Dynasty at a period *anterior* to that of the 6th Dynasty! But this little confirmation from considerations connected with Poole's views regarding the G.P.Y.'s formed before I had arrived at my final results, has a steadying effect. We must remember, too, that the 12th Dynasty was a Theban Dynasty. The 6th was Memphite, as also was the 4th. Further, they probably got the serial numbers with which they have come down to us, at a time when —as is very well known now—the supposed facts regarding the Dynasties and their mutual relations in point of time, and their respective kings, and the lengths of their several reigns, and in fact all so-called knowledge about them, was exceedingly confused.

So great, so surprisingly great, is this confusion, that in my opinion it is only explicable on the hypothesis that the Land of Egypt

sustained some tremendous catastrophe of which conventional scholarship is still ignorant. In my book on EUROPEAN AND OTHER RACE-ORIGINS I show what I believe this catastrophe to have been—*the wholesale deportation of the race of Ancient Egyptians from Egypt by Nebuchadrezzar of Babylon.* Nothing but an event of that magnitude and drastic character will, in my opinion, explain the oblivion which seems to have swallowed up so great a portion of their past history.

In *Ancient Records*, vol. i, p. 48, Breasted has a note entitled, " Addendum on Chronology " (§ 42), regarding a fragmentary relief found in the tomb of Thutnakht (El Bersheh), recording that the Flax-Harvest, which, he says, as the 113–117th days from 1st Epiphi, normally falls between 9th–13th November, had taken place between " the 23rd and 27th of the fourth month." By his reference to " early April," Breasted seems to identify this " fourth month " with Phamenoth.

Let us analyse these data.

23rd–27th Phamenoth=263–267 days from 1 Epiphi.

9th–13th November = 18–22 Paopi = really 108–112 days from 1st Epiphi; not 113–177 days.

113–117 to 263–267=a shift of 150 days.

108–112 to 263–267=a shift of 155 days.

According to Breasted 150 days=600 years. According to my reckoning it is 608$\frac{3}{5}$ Cyclic years. Therefore 155 days=628$\frac{1}{8}$ Cyclic years.

On these data Breasted says there was a shift of the Calendar amounting to over 200 days, showing that the Flax-Harvest in 23rd–27th Phamenoth occurred in the middle of the 20th Century B.C.

As I read the data the shift was one of 155 days, or 628$\frac{1}{8}$ years from normal Harvest to abnormal Harvest. This is the same thing as a shift of P. 1 Thoth, or New Year's Day, from F. 1 Thoth (Cyclic Division 1460) to 5th

Mechir=628$\frac{1}{8}$ Cyclic years past 1460=A.M. 2088$\frac{1}{8}$, or B.C. 1907$\frac{7}{8}$. All this, of course, is on the assumption that Prof. Breasted is right in regarding (if he does regard) Phamenoth as the "fourth month." My submission, however, is that by the "fourth month" was meant, not Phamenoth at all, but Khoiak: for, as fully explained elsewhere, in calculations intended to place any given event in its proper position *on the true* SOTHIC CYCLE which always commences from the AUTUMNAL EQUINOX, we must count *from F. 1 Thoth*. The true position then works out thus—

Counting now from F. 1 Epiphi to F. 23–27 Khoiak, instead of to F. 23–27 Phamenoth, we get 173–177 days, instead of 263–267 days. The shift between 108–112 days and 173–177 days=65 days, as against the previous 155 days. This is 263$\frac{1}{8}$ Cyclical Divisions past 1460, representing the previous first Cycle =A.M. 1723$\frac{1}{8}$=47$\frac{1}{8}$ years earlier than Senwosri III's 7th regnal year. Now, let us test

this shift of 65 days by the Sothic Rising. In A.M. 1723⅛ the Rising occurred on P. 26 Pharmūthi=True Time F. 6 Athyr, as will be seen on reference to TABLE II. Well, what is the shift between F. 1 Thoth and F. 6 Athyr? It is 66 days=practically the same as the shift at the time of this Flax-Harvest. Now, according to the standpoint from which we look at it, this may or may not be described as corresponding "completely" with the shift in Senwosri III's time, which was from F. 1 Thoth to F. 17 Athyr=77 days. It certainly corresponds if we allow for the 47⅛ years intervening between the two periods. But it is a very different shift from Prof. Breasted's 225 days for Senwosri III's time.

4. THE 18TH DYNASTY.

Period according to different authorities.

Breasted (*Anc. Rec.*, vol. i, p. 42): A.M. 2424–2654=B.C. 1580–1350.

Petrie (vol. ii, p. 29): A.M. 2417–1676=B.C. 1587–1328.

Budge (p. 252): A.M. 2404–2604 = B.C. 1600–1400.

Brugsch (p. xxii): A.M. 2304–2571 = B.C. 1700–1433.

Dimbleby: A.M. 2235–1558 = B.C. 1761–1438.

Period of Thothmēs III.

Petrie places his accession at B.C. 1503.

Mahler, as modified by Lehmann and Eduard Meyer; 3rd May, B.C. 1501 to 17th March, B.C. 1447.

Breasted adopts this last period.

What I now propose to do is to make, not so much further investigations and calculations as an application and adjustment of the conclusions to which I have come by the methods hereinbefore explained.

Having ascertained that A.M. $2524\frac{7}{12}$, or B.C. $1471\frac{5}{12}$, was the 16th regnal year of Queen Hatshepsūt, and the 3rd of Thothmēs III; that they celebrated a SED HEB that year jointly; and that the year was also marked by a SOTHIC RISING on the 21st Epiphi; and

having also ascertained that A.M. 2555, or B.C. 1441, was the 33rd regnal year of Thothmēs III; that in that year a SOTHIC RISING took place on 28th Epiphi; and also that in the same year Thothmēs III celebrated a HUNTI HEB, or QUADRUPLE FESTIVAL, which is on my *List of Hebs;* many other important dates, hitherto wandering about in uncertainty, fix themselves.

The following is a SUMMARY in skeleton form of some of the more prominent dates for a portion of the 18th DYNASTY (ĀAHMĒS to THOTHMĒS III), established by my methods of investigation.

A.M.

2439=B.C. 1557. Accession of ĀAHMĒS, the Founder of the Dynasty. Some time during the first 4 or 5 years of his reign he permitted the Āamū or Shāsū and their Hyksōs (*Hek-Khāskhetū, Heqū-Shāsū*) leaders, whom he had shut up in Hauar, or Avaris, to depart thence for the country afterwards called Palestine and Syria.

A.M.		
2443	5th year.	Aahmēs pursues the Hyksōs, and besieges them in Shārhāna, the Shārūhen of *Joshua* xix. 6.
21		Reigns 25 years.
2464=B.C. 1532.	1st year.	AMENHOTEP I succeeds. Reigns just over 21 years.
2465	2nd ,,	
2466	3rd ,,	
2467	4th ,,	
2468	5th ,,	
2469	6th ,,	
2470	7th ,,	7th Epiphi, SOTHIC RISING. This is the Rising that should have been on Petrie's List, vol. ii, p. 32, instead of the Rising there given as 9th Epiphi, 9th regnal year.
2471	8th ,,	
2472	9th ,,	
2473	10th ,,	
2474	11th ,,	
2475	12th ,,	
2476	13th ,,	

A.M.			
2477	14th year.		
2478	15th	„	9 Epiphi, SOTHIC RISING. This is the Rising wrongly associated in Petrie's List
2479	16th	„	year.
2480	17th	„	
2481	18th	„	
2482	19th	„	
2483	20th	„	
2484	21st	„	
2485 =B.C.1511.	22nd	„	THOTHMES I succeeds P. 21 Phamenoth (Dec.). Reigns 25 years 4 months.
	1st	„	
2486	2nd	„	
2487	3rd	„	
2488	4th	„	
2489	5th	„	
2490	6th	„	
2491	7th	„	
2492	8th	„	
2493	9th	„	
2494	10th	„	
2495	11th	„	
2496	12th	„	
2497	13th	„	
2498	14th	„	

A.M.		
2499	15th year.	14 Epiphi, SOTHIC RISING. This supplies the datum as to regnal year not given in the List in *Petrie*.
2500	16th ,,	
2501	17th ,,	
2502	18th ,,	
2503	19th ,,	
2504	20th ,,	
2505	21st ,,	
2506	22nd ,,	
2507	23rd ,,	
2508	24th ,,	
2509	25th ,,	
2510	26th ,,=B.C. 1486.	
	23 Sep.	
	Oct.	During months of Mechir, Phamenoth and Pharmuthi HATSHEPSŪT is associated on the throne with Thothmēs I.
	Nov.	
	Dec.	
	Jan.	
	Feb.	4 Pakhons. THOTHMĒS II dates his reign from now.
	Mar.	
	Apr.	21 Epiphi. Thothmēs I dies, having reigned

A.M.		
		25 years up to 21 Phamenoth, and then another 4 months.
		May.
		June. New Year's Day. HATSHEPSŪT'S CORONATION. Her 1st year begins.
		July.
		Aug.
		22 Sep.
2511	2nd year of Hatshepsūt begins at New Year, late in the Natural Year.	
2512	3rd ,,	
2513	4th ,,	
2514	5th ,,	
2515	6th ,,	
2516	7th ,,	
2517	8th ,, of Hatshepsūt begins late in Natural Year.	
2518	9th ,,	
2519	10th ,,	
2520	11th ,,	
2521	12th ,,	
2522	13th ,,	
2523	14th ,,	P. 4 Pakhons (about Feb.), Thothmēs II dies. THOTHMĒS III succeeds. His 1st year begins.

A.M.

2524 15th year. P. Phamenoth. TOTAL SOLAR ECLIPSE in Dec.

P. 4 Pakhons (about Feb.), Thothmēs III's 2nd year begins.

2525=B.C. 1471.

$1\frac{1}{2}$ 23 Sep.–22 Oct.

$1\frac{2}{2}$ 23 Oct.–22 Nov. P. 1 Mechir. Quarrying for Obelisk begun under Hatshepsūt's orders.

$1\frac{3}{2}$ 23 Nov.–22 Dec.

$1\frac{4}{2}$ 23 Dec.–22 Jan.

$1\frac{5}{2}$ 23 Jan.–22 Feb. P. 4 Pakhons. Thothmēs III's 3rd year begins.

$1\frac{6}{2}$ 23 Feb.–22 Mar. P. 21 Epiphi, SOTHIC RISING.

$1\frac{7}{2}$ 23 Mar.–22 Apr. P. 30 Mesorē. SED HEB celebrated by Queen and Thothmēs III, and Obelisk erected at Karnak.

$1\frac{8}{2}$ 23 Apr.–22 May.

$1\frac{9}{2}$ 23 May–22 June. New Year's Day. Hatshepsūt's 16th year begins.

$1\frac{10}{2}$ 23 June–22 July.

$1\frac{11}{2}$ 23 July–22 Aug.

$1\frac{12}{2}$ 23 Aug.–22 Sep. Close of Natural Year.

2526 Thothmēs III's 4th yr. & Queen's 17th yr. begin as above.

2527 „ 5th „ „ 18th „ „

2528 „ 6th „ „ 19th „ „

A.M.

2529 Thothmēs III's 7th yr. & Queen's 20th yr. begin as above.

2530 „ 8th „ „ 21st „ „

2531=B.C. 1465 9th „ „ 22nd „ Hatshep-sūt dies, and Thothmēs III begins to reign as an independent monarch.

2532 Thothmēs III.'s 10th yr. begins at P. 4 Pakhons.

2533 „ 11th „ „ „

2534 „ 12th „ „ „

2535 „ 13th „ „ „

2536 „ 14th „ „ „

2537 „ 15th „ „ „

2538 „ 16th „ „ „

2539 „ 17th „ „ „

2540 „ 18th „ „ „

2541 „ 19th „ „ „

2542 „ 20th „ „ „

2543 „ 21st „ „ „

2544=B.C. 1452. 23 Sep.

Feb. P. 4 Pakhons. Thothmēs III's 22nd year begins.

22 Sep. Close of Natural Year.

2545=B.C. 1451. 23 Sep.

Feb. In this his 22nd yr., month P. Pharmuthi, 25th day, Thothmēs III found himself in Zalu, Zaru, or Tharu (Zoan-Tanis) on the frontier of Egypt, on his 1st Syrian campaign.

A.M.

✗ P. 4 Pakhons. His 23rd yr. begins. In this yr., month P. Pakhons, the anniversary of his Coronation, he found himself at Gaza-tu, or Gaza (*Petrie*, vol. ii, pp. 103, 104; *Brugsch*, p. 154).

22 Sep. Close of Natural Year.

2546 Thothmēs III's 24th yr. begins on P. 4 Pakhons.

2547 ,, 25th ,, ,,

2548 ,, 26th ,, ,,

2549 ,, 27th ,, ,,

2550 ,, 28th ,, ,,

2551 ,, 29th ,, ,,

2552 ,, 30th ,, ,,

2553 ,, 31st ,, ,,

2554 ,, 32nd ,, ,,

2555=B.C. 1441. 23 Sep.

Feb. P. 4 Pakhons. Thothmēs III's 33rd year begins.

Apr. P. 21 Epiphi. Sothic Rising.

June. P. 30 Mesorē. Hunti Heb No. 48 (12th Quadruple) on *Heb List* celebrated.

22 Sep. Close of Natural Year.

21

2576=B.C. 1420. 23 Sep.

Dec. P. 30 Phamenoth. Thothmēs III died, after having reigned 53 years 10 months 26 days. Said to have been about 63 years old.

One or two points in the foregoing rough statement call for special remark.

First, there is my equation of the death of Queen Hatshepsūt in her 22nd regnal year with the 9th regnal year of Thothmēs III. Petrie (vol. ii, p. 101) puts her death as having occurred about 4th Mechir in the 22nd regnal year of Thothmēs III. Brugsch seems to follow Petrie in this. On the monuments there is no specific record of the date when she died. But it seems to be pretty obvious that that event took place in *her own* 22nd year, not in that of Thothmēs III. Speaking of a mining expedition sent by Hatshepsūt to Sinai in her 16th regnal year, Breasted (*Hist.*, p. 282) says: "This work in Sinai continued in her name until the twentieth year of her

reign. Some time between this date and the close of the year twenty-one, when we find Thutmose III ruling alone, the great queen must have died." Precisely so, except that Breasted docks her of more than a year. If, with Petrie and Brugsch, we take her death as having occurred in the 22nd regnal year *of Thothmēs III*, we are compelled to assign her a regnal period of 34 years. So far, however, as I am aware, there is nothing in the records supporting that view. Assuming that I am right, it seems to me that the mistake into which Petrie and Brugsch have wandered has arisen from both or one of them having unconsciously confused *Hatshepsūt's* 22nd year with *Thothmēs III's* 22nd year. Moreover, there is another way of looking at the matter. According to Breasted and Brugsch, the very moment Hatshepsūt died, Thothmēs III, as though by magic, appears possessed of a brand-new army capable in all respects of victoriously campaigning in Syria. Having regard to the

position he occupied while she was alive, such a thing was impossible. But the whole aspect of affairs changes if we assume that he came into supreme power in his 9th regnal year. Incited to rebel by the recently departed Hyksōs and by emissaries from Mitanni, Egypt's empire in Palestine and Syria was showing symptoms of an ever-increasing restlessness that boded much ill for the near future, and the re-establishment of her authority was bound to be a long and heavy task. By having now to assign the commencement of Thothmēs III's independent reign to his 9th regnal year, instead of to his 22nd, when his 1st campaign was undertaken, sufficient time is allowed him for the necessary labour of preparing his strategical plans, and organising his resources, and especially of raising, training, equipping, and collecting supplies and transport for the forces that the long series of enterprises he manifestly had in view would require. It was not, however, a case

of one brilliant campaign, necessary for the suppression of a revolt. Thothmēs III's subsequent campaigns were no less than 17 in number, conducted almost annually; and remembering this and the magnitude of his achievements, we are forced to conclude that many years of organisation must have preceded those during which he executed his plans. Breasted, indeed, seems to be not unconscious of the necessity for some such long period of preparation (p. 285).

Few or none will fail to notice that according to my figuring in the above statement, Thothmēs III marched out of Egyptian territory on his 1st campaign about the beginning of February. Breasted (p. 285) puts the time of his departure at about the 19th April, and elsewhere it is stated that all the northern campaigns were initiated about that season. I quite appreciate the view that military operations in that part of the world would *as a rule* be so timed as to avoid the difficulties

always resulting from the "Rains." Usually there is a preliminary fall in November. December is wetter. In January the downpour is the heaviest of all. It is not quite so bad in February; and March is also a wet month. I do not know on what basis Breasted concludes that Pharmuthi equated with 19th April. On the Fixed Clock, of course, Pharmuthi corresponds with May. But it has to be remembered that the dates given in Thothmēs III's records *are those of the Progressive Clock, not the Fixed Clock at all.* With regard to any particular year it is an easy matter to ascertain at what point on the Fixed Clock New Year's Day, or P. 1 Thoth, fell. Knowing that, we can obtain the point on the Fixed Clock at which any other Progressive date fell, and so arrive at the season thereby indicated. I propose, therefore, to go into detail on these lines, in connection with three of the more important years referred to in the above statement, *e.g.* A.M. 2525, A.M. 2545, and A.M.

2555. The importance of A.M. 2525 and A.M. 2555 consists, it will be remembered, in the fact that, by referring to our *List of Hebs*, we see that they are "Clinch dates," giving us a fixed point from which we can securely elaborate our other adjustments. That *List*, in fact, according as it does or does not tally with our SOTHIC RISINGS, is our *Chronological Control*. Further, it is permissible to suppose that in planning and carrying out his military operations Thothmēs III kept in view weather conditions certainly, but surely not weather conditions alone. Various considerations—political, military, economical, or otherwise—may have compelled, or at least induced, him to penetrate the enemy's country at a time other and earlier than that at which the enemy would in ordinary course have been expecting him. But even if the Progressive Pharmuthi mentioned in Thothmēs III's records will not equate with the end of the "Rains," the difficulty is not insurmountable. So

forcibly and clearly do my adjustments, even to fractions of years, carry on their own face proof of their correctness as Clock Time, that I do not see my way to give them up, simply because it is reasonable to think that the Syrian campaigns of the ancient Pharaohs were as a rule undertaken towards the end of April.

In justice, however, to Professor Breasted, I feel bound to make on this subject the following concluding, and perchance conclusive, remarks.

Breasted says that the season when Thothmēs III began his 1st campaign was about 19th April. According to my Progressive Clock, it was about 6th February, and naturally I believe in my Clock.

It is possible, however, that both of us are right. Or rather, it is probable that he is right, and yet that I am not wrong, provided that my Tables, based as they are on the assumption that the mutual relations of the

Clocks remain normal, really represent Natural Time. Some way back, however, it will be remembered that we discovered that in the time of Amenhotep I the Clocks had got out of touch with Natural Time by 421$\frac{1}{8}^{\frac{1}{8}}$ Cyc. Divs., *i.e.* the difference between 1005$\frac{1}{8}^{\frac{1}{8}}$ and 1427$\frac{1}{8}^{\frac{0}{8}}$. This represents 104 days on the Clock of the Year, or 3$\frac{1}{2}$ months. In the reign of Amenhotep I, therefore, Natural Time was about 3$\frac{1}{2}$ months ahead of the seasons shown on the Clocks. Now, conditions could not have been very different when Thothmēs III acceded. Therefore, if the Clocks show that he began his 1st campaign about 6th February, he would *really*, according to Natural Time, have begun it about 20th May.

It is a pleasure to me that the argument should have taken this turn, as it not only enables me to place the honours where they are due, *i.e.* with Professor Breasted, but it also seems to show that my reasonings on the

subject of the revelations which I extracted from Petrie's List of Risings are sound.

At the same time, for the purposes of internal analysis and synthesis, the Clocks may be considered as correct.

The first year that I shall subject to the process above referred to is A.M. 2545=B.C. 1451, being the year in which Thothmēs III entered upon his 1st Syrian campaign. It will be necessary, however, to go back to the previous year, A.M. 2544, in order to see on what date, according to our reckoning, New Year's Day fell that year.

A.M. 2544=B.C. 1452.

This was Cyclical Division 1084 of the 2nd Cycle. That year New Year's Day, or Progressive 1 Thoth, fell at 28 Pakhons on the Fixed Clock. This was our 17th June. Hence

P. 1 Thoth	=F. 28 Pakhons	=17 June, B.C. 1452.
1 Paopi	= 28 Paoni	=17 July
1 Athyr	= 28 Epiphi	=16 August
1 Khoiak	= 28 Mesorē	=15 September
8 „	= 5 Thoth	=22 „

This closes Natural Year, A.M. 2544. We now start the next Natural Year thus—

A.M. 2545 = B.C. 1451.

P. 9 Khoiak	= F. 6 Thoth	=23 Sep., B.C. 1451.
1 Tybi	= 28 „	=15 October
1 Mechir	= 28 Paopi	=14 November
1 Phamenoth	= 28 Athyr	=14 December
1 Pharmuthi	= 28 Khoiak	=13 January
25 „	= 22 Tybi	= 6 February

This was the date, in his 22nd regnal year, on which Thothmēs III found himself in Zālū.

1 Pakhons	=28 Tybi	=12 February
4 „	= 1 Mechir	=15 „

This was the anniversary of his Coronation, the beginning of his 23rd regnal year, and the date on which he found himself at Gāzātū.

Hence, unless there is some fundamental misconception in my method, or an arithmetical mistake somewhere in my reckoning, or unless (as we have seen was the case) NATURAL TIME had shot ahead of the Clocks, we must conclude that Thothmēs III marched out of Zālū (Zoân-Tanis) on his 1st campaign at the

end of the first week in February, *ordinarily* the second wettest month of the "Rains," but in A.M. 2545 perchance not so wet as usual, and therefore perhaps leaving the country to be traversed in a state that presented no difficulties such as were likely to deter a resolute General and troops that were keen for active service. But if, as seems to have been the fact, NATURAL TIME had overshot the Clocks by 3½ months, he departed from Zālū about 20th May.

Now let us ascertain the details of A.M. 2525, the important year in which Hatshepsūt's 16th regnal year equated with Thothmēs III's 3rd year. The previous year New Year's Day, or P. 1 Thoth, fell at Cyc. Div. 1064 of the 2nd Cycle=F. 23 Pakhons, or our 12th June B.C. 1472. Hence—

P. 1 Thoth	=F. 23 Pakhons	=12 June, B.C. 1472.
1 Paopi	= 23 Paoni	=12 July
1 Athyr	= 23 Epiphi	=11 August
1 Khoiak	= 23 Mesorē	=10 September
13 „	= 5 Thoth	=22 „

This closes A.M. 2524 Natural. We now start on A.M. 2525—

P. 14 Khoiak=F. 6 Thoth=23 September, B.C. 1471.
1 Tybi = 23 „ =10 October
1 Mechir = 23 Paopi= 9 November

On this date, under Hatshepsūt's orders, quarrying was commenced for the Obelisk afterwards, *i.e.* in Mesorē, erected at Kārnak.

P. 1 Phamenoth=F. 23 Athyr = 9 December
1 Pharmuthi = 23 Khoiak= 8 January
1 Pakhons = 23 Tybi = 7 February
4 „ = 26 „ =10 „

On this date Thothmēs III's 3rd regnal year began. It was the anniversary of his Coronation Day.

P. 1 Paoni =F. 23 Mechir = 9 March
1 Epiphi= 23 Phamenoth= 8 April
21 „ = 13 Pharmuthi =28 „

This was the date of the SOTHIC RISING that year.

P. 1 Mesorē=F. 23 Pharmuthi=8 May
30 „ = 22 Pakhons =6 June

On this date Hatshepsūt and Thothmēs III jointly celebrated SED HEB No. 47 on the *Heb List*, and the Obelisk, the quarrying for which had begun 7 months previously, on P. 1 Mechir, was standing erected and finished in its place in the Temple at Karnak.

The next day was P. 1 Thoth, or New Year's Day=7th June. But if we ascertain its date by the Clock, we shall find a difference of 5 days. Thus, A.M. 2525 is Cyclical Division 1065 of the 2nd Cycle. At that point P. 1 Thoth falls on the 12th June. This result is owing to the unsatisfactory nature of our Calendar, which will not run properly when an attempt is made to equate it continuously, year after year, with a Calendar that is essentially Cyclical. In other words, except for our own little purposes, our Chronological System is unworkable, because it is arbitrary and unscientific.

This reveals the danger of setting down the Progressive date, the date on the Fixed Clock,

and the English date day by day, and carrying on that equation from one year to another continuously over a stretch of several years. For in course of time our dates thereby lose all value as indicators of the true season. The reason is clear.

Every 121⅔ Cyclical Years New Year's Day, or P. 1 Thoth, falls at a point on the Fixed Clock which is 1 month further ahead than it was at the beginning of that stretch. Thus, after the 1st 121⅔ Cyclical Years it falls at F. 1 Paopi, and so indicates 23rd October instead of 23rd September. At Cyclical Division 243⅓ it falls at F. 1 Athyr, and so indicates 22nd November instead of its original 23rd September. In this way it proceeds round the Clock till it reaches Cyclical Division 730, when instead of indicating the Autumnal Equinox it indicates the Vernal Equinox. When at last it reaches Cyclical Division 1460 it is back again at its original position as indicator of the Autumnal Equinox. On this

basis, of course, our English dates represent the real Natural Seasons.

But if, instead of tracing Progressive New Year's Day round the Fixed Clock like this, we set the three different styles of dates down in equated parallel columns, day by day, and year after year continuously, our English dates do not fall in quite the same way. We have just seen an instance of it when, instead of falling as equating with 7th June, P. 1 Thoth falls as equating with 12th June. This means that not P. 1 Thoth, but our English dates gradually lose their character as indicators of the real Natural Seasons. In the course of half a Cycle they must indicate the exact reverse of what they should indicate, and they will never get back their original character till in process of time the entire Cycle of 1460 Years has been covered. To find, therefore, the true season of a year for any particular date on the Egyptian Calendar in terms of our English dates, it is necessary to deal with each A.M. separately,

ascertain the date of its New Year's Day in terms of our English chronological nomenclature, and then, from that as a basis, by a series of equations ascertain the English date of the particular Egyptian date that we are interested in.

The remaining year for which we want details is A.M. 2555, or B.C. 1441. That year New Year's Day, or P. 1 Thoth, fell at Cyclical Division 1095 = F. 1 Paoni = 19 June. Therefore, working this time backwards, we get—

P. 1 Pakhons = F. 1 Mechir = 19 February, B.C. 1441.
4 „ = 4 „ = 22 „

This date was the anniversary of Thothmēs III's Coronation, and the beginning of his 33rd regnal year.

P. 1 Paoni = 1 Phamenoth = 21 March
1 Epiphi = 1 Pharmuthi = 20 April
21 „ = 21 „ = 10 May

This was the date of the SOTHIC RISING that occurred that year.

P. 1 Mesorē = 1 Pakhons = 20 May
30 „ = 30 „ = 18 June

On this date HUNTI HEB, No. 48 (12th Quadruple) on my *Heb List*, was celebrated by Thothmēs III.

Next day was, of course, New Year's Day.

With this my task is done.

The 19th Dynasty is very inviting, summoning up, as it does, visions of KRETE and THE ISLES OF THE SEA, MYKENAEAN CIVILISATION, the OPPRESSION OF THE HEBREWS, the EXODUS, and all the attractive problems connected with each of these great subjects. Some day, should time and opportunity permit, I may venture to attack them.

Here and now I will merely state—by way of clue to, or hint of, what it is possible to say—that, by continuing my list of SOTHIC RISINGS from our fixed point A.M. 2555, I find that the Rising given in Petrie's *List* as occurring on 29th Thoth in the 2nd regnal year of MERENPTAH of the 19th Dynasty,

occurred in A.M. $2802\frac{7}{8}$ = B.C. $1193\frac{1}{8}$. I take it, however, that 29 Thoth was a mistake on the part of the Scribes for 28 Thoth. The year would then really be A.M. $2798\frac{1}{3}$ = B.C. $1197\frac{2}{3}$. If that was Merenptah's 2nd regnal year, his 1st was A.M. $2797\frac{1}{3}$ = B.C. $1198\frac{2}{3}$, and his 5th regnal year must have been A.M. $2801\frac{1}{3}$ = B.C. $1194\frac{2}{3}$. This was the famous epoch in which Merenptah repelled the mighty onslaught on Egypt of THE PEOPLE OF THE SEA—the AQAIUSHA, TŪRISHA, LEQŪ or LŪQŪ, SHARDANA, and SHAKALSHA, allied with the LIBYAN (Tahennuan or Tamehuan) MASHAUASHA, under Māur Mey, son of Did—the first historical mention hitherto met with of European Peoples. In Merenptah's *Song of Triumph* over these invaders occurs also the first historical mention of the name ISRAEL:—

"Tahennu (Libya) is laid waste: Kheta (Hittite-Land) is pacified: Pa-Kanaana is ravaged with all violence: Askadna (Askelon) is led away: Kazmel (Gezer) is taken: Yenū

Āamam is made as though it were not: the people of ISRAEL (I-si-rā-al) is spoiled—they have no seed (crops?): Khārū (Palestine) hath become as a widow by Egypt."

Besides this there is also (*Papyrus Anastasi* vi) a despatch from one of Merenptah's Frontier Officials:—

"Another matter for the satisfaction of my lord's heart: We have finished passing the tribes of the Shāsū of Edom through the Fortress of Merenptah-Hotephirma, L.P.H., in Thekū, to the pools of Pithom, of Merenptah-Hotephirma in Thekū, in order to sustain them and their herds in the domain of Pharaoh, L.P.H., the good Sun of every land."

Even up to so late a period as the reign of Rāmsēs III in the beginning of the 20th Dynasty, we have unquestionable evidence that Khārū, or Palestine, was effectually subject for a while to the rule of Egypt, and even Syria was under more than her influence.

All this causes us to hold our conventional

views of the EXODUS in suspense, and seems to throw a rather disturbing light upon the CONQUEST OF PALESTINE BY JOSHUA, as that event is related in the Bible. The subject, however—including, as it does, the problem of HEBREW, ISRAELITISH, and JEWISH ORIGINS—is a big one, and cannot be entered into here.

I set out to fix certain eras in the periods of the 4th, the 6th, the 12th, and the 18th DYNASTIES. I believe that I have done this; and in that belief I claim that in regard to Chronology I have ousted our leading Egyptologists from the positions which they have held unchallenged so honourably and so long.

But if, by my analysis of their long-established views, I have been destructive, none can say that by my own theories on the subjects dealt with I have not also been constructive. I have revealed the true nature of the SOTHIC CYCLE OF 1460 YEARS; I have shown what the SED and HUNTI HEBS really

were, and how supreme is their importance as checks; and I have discovered mistakes in our list of data regarding certain Risings of Sothis, and rectified them. In achieving this I claim that—not by merit, but by mere good luck attendant upon my researches—I have discovered the SECRET OF ANCIENT EGYPTIAN CHRONOLOGY.

It will now be possible to determine with meticulous nicety the majestic chronological sequence of the history of those old Dwellers on the Nile. With that sequence taken as a main-line, and with lateral synchronisations projected out towards BABYLONIAN, ASSYRIAN, KRETAN, MYKENAEAN, HITTITE, HELLENIC, HEBREW and other records, we should now be able to reconstruct the PAST on a scale and with a degree of elaboration respectively greater and more minute than has ever been possible before. Indeed, there is no reason now why future industry should not enable us to present to coming generations, nay, to our

own, a picture of ANTIQUITY as imposing in general outline and as brilliant in detail as is likely to be the history of our own momentous times.

Should my claim be justified, all I can say is that any merit that may attach to what I have done will be ascribable to the magnificent sources of information contained in the works of Professors Petrie, Breasted, Budge, the late Mr. R. S. Poole, and Mr. J. B. Dimbleby, some of which I was fortunate enough to be able to refer to constantly. Without them I could never have hoped to work out my results. They are beyond all praise: but I trust I may be forgiven if I add that they will be many times more valuable than they are, when once they are re-cast, as I hope some day to see them re-cast, on the basis of a Chronology of which we are sure.

ADDENDUM

In conclusion, attention may be drawn to the fact, noticed by the late Emanuel Deutsch (*Literary Remains*, 1874, p. 183), that, according to Manĕtho, that mighty and mysterious personality who goes by the name of Hermēs Trismegistus is traditionally alleged to have written exactly 36,525 Egyptian books.

Of course, a statement like this is only a veiled allusion to some esoteric truth. What can that esoteric truth be?

We have seen that the Ancient Egyptian Sothic Cycle consisted of 1460 Years. We have also seen that at the end of every such Cycle there is a shortage, as compared with Natural Time, of $370\frac{5}{7}$ Days, or, say, 1 Year. If, then, this be added, we get 1461 Years as the perfected Sothic Cycle, or at least as nearly perfected as is required for practical purposes. Now, if 1461 be multiplied by 25, the result is exactly the above-mentioned total, 36,525 Years! This is both interesting and significant: but significant of what? Is it not suggestive of some Cycle, even greater than the Sothic Cycle, of which the Ancient Egyptians were aware—a Super Sothic Cycle, somewhat similar, perhaps,

For instance, in A.M. Before Zero 560, or Conv. B.C. 4556, the Sun, which had previously been in Constellation GEMINI, entered Constellation TAURUS, and it remained there, and the cult of the Zodiacal BULL (Mer-Ra) was accordingly in vogue, till Conv. B.C. 2401 = B.C. 2383 A.M. 1602, after which it entered Constellation ARIES (Ammon, Amon, or Amen), and thereupon the right to divine honours, as the SOLAR DEITY throughout KHEM, passed from the Zodiacal BULL to the Zodiacal RAM. This was just about a generation (34 years) before the accession of AMENEMHAT I of the 12th Dynasty. It was by this Dynasty that AMMON-RA was first officially recognised. It is interesting, however, to note that there had been an AMENEMHAT, the first of the name known (Vizier of Mentu-Hotep III of the 11th Dynasty), some 54 years before the accession of AMENEMHAT I of the 12th Dynasty in A.M. 1637 = B.C. 2358 = Conv. B.C. 2366.

to that GRAND CYCLE of about 25,920 Years known to modern astronomers, which results from the fact that the Sun appears to continue in each of the 12 Constellations of the Zodiac successively for some 2160 Years?

For instance, in A.M. 1500, or B.C. 2492, the Sun, which had previously been in GEMINI, is said to have entered TAURUS, and it remained in that constellation, and the Cult of the BULL was accordingly in vogue, till A.M. 3668, or B.C. 328 (Macedonian Period), when it entered ARIES, and thereupon the right to divine honours passed from the BULL to the RAM.

Scrutinised under the light that streams from this remote but majestic source, the Records of Antiquity reflect back many a glittering and fascinating aspect, whose very existence, I venture to say, many people have not even suspected, but the effect of which will by no means impossibly be to change completely the values hitherto attached to several of what have been considered our more familiar data of knowledge.

The subject is of too complex a nature to be entered into here; but, I ask, has it ever occurred to any of my readers to wonder who the worshippers of MĒR-RĀ, "the Bull," were? Or who the 'ABĪRĪ, or "People of the Bull," were? Or what relations, if any, either in or out of the Delta, subsisted between these two communities during and after the period of the 18th DYNASTY? A world of investigation, speculation, and re-construction lies in, and is connected with, the answers to these three questions.

SOLAR TIME AND THE SOTHIC YEAR

In *Ancient Records*, vol. i, p. 26, Prof. Breasted points out that the interval between any heliacal Rising of Sothis and that of its successor in the following year was *approximately* a Solar Year. In *Note b*, on p. 27, he further states that in B.C. 4231, the Summer Solstice fell at our 28th July. Each century it was always 18 hours 40 minutes earlier than the Sothic Rising. In the 31st century (3001–3100) B.C. it coincided with the Rising on 19th July. In B.C. 231 it had advanced 31 days (31 days 6 hours 40 minutes) to 27th June.

From these data we can ascertain how long the Summer Solstice took to sweep right round the Clock. Thus—

In B.C. 4231 it was at	28 July.
In 40 centuries (roughly), *i.e.* by B.C. 231, it fell	27 June.
In 40 centuries more it will fall ...	28 May.
,, ,, ,, ...	27 April.
,, ,, ,, ...	28 March.
,, ,, ,, ...	25 February.
,, ,, ,, ...	28 January.

In 40 centuries more it will fall			...	28 December.
,,	,,	,,	... ...	27 November.
,,	,,	,,	... ...	28 October.
,,	,,	,,	... ...	27 September
,,	,,	,,	... ...	28 August
,,	,,	,,	... ...	28 July
	Allow 3 days 8 hours more			3
				25 July

We thus arrive at what seems to be a SUPER CYCLE of 480 Centuries, though of course the exact period in which the above advance of a month is effected is probably less than 40 Centuries, which is no doubt only an approximation in round numbers. This SUPER CYCLE of 48,000 Years cannot very well have anything to do with the ZODIACAL GRAND CYCLE of 25,920 Years, because that divided by 12=only a little more than 20 Centuries, *i.e.* 2160 Years, the time during which the Sun appears to remain in each of the Twelve Signs. But it is obviously the CYCLE of the COINCIDENCE of the SUMMER SOLSTICE with the SOTHIC RISING, and may possibly have really consisted of 25 SOTHIC CYCLES of 1461 Years each. That is to say, should it turn out that the period in which the SUMMER SOLSTICE falls 1 month in advance is really about 30 Centuries, then it is just possible that we are here on the track of that other SUPER CYCLE of exactly 36,525 Years which, as we have seen, was associated with the mysterious name of HERMES TRISMEGISTUS.

Unfortunately we are not told the year in which the SUMMER SOLSTICE *began* to fall at any particular date—say 19th July, the epoch of Coincidence with the RISING—or how many years it *remains* at that particular date.

EPILOGUE

WHAT led me into the train of thought which I have tried to follow up in the foregoing pages, I hardly know. Perchance it was certain references to Ancient Egyptian History contained in my work, EUROPEAN AND OTHER RACE-ORIGINS—references which, in regard at least to chronology, will now require revision.

Obscure and abstruse, the subject is yet enthralling, not only in itself, but also in respect of the possibilities which seem to hover all round it. Haply my treatment of it may induce others, more competent, to give it more serious and scientific attention than it has hitherto received.

I have at least blazed the trees, so to speak; but though this little book—the brain-flash of a month—reveals, as I believe, THE SECRET OF EGYPTIAN CHRONOLOGY, I nevertheless feel that, in the beautiful words of Professor Gilbert Murray, it goes forth upon its fortunes—

"A thing not perfectly articulate, which means more than it can ever say, possesses more than it can ever impart, envisages more than it can ever define." (*The Rise of the Greek Epic*, p. 273.)

H. B. H.

APPENDIX

TABLE I

SHOWING progress of the Revolving NEW YEAR'S DAY, or P. 1 THOTH, as it shifts from day to day round the Fixed Clock, remaining at each day, *i.e.* passing through $4\frac{1}{8}$ Cyclical Divisions, for 4 years, *i.e.* passing through $121\frac{2}{3}$ Cyclical Divisions every month. Wherever P. 1 THOTH falls, the 4 years indicated in the last column represent, under normal conditions, TRUE TIME.

Day of Month.	Egyptian Fixed Month.	Day of Month.	English Fixed Month.	The 4 years during which Progressive 1 Thoth, or New Year's Day, falls on same day of the Fixed Clock. 1, 2, 3, 4 (*i.e.* $\frac{1}{4}$ added to each year regarded as a unit).	$+\frac{1}{18}$
1	Thoth	23	Sept.		
2	,,	24	,,	$5\frac{1}{18}$, $6\frac{1}{18}$, $7\frac{1}{18}$, $8\frac{1}{18}$	$+\frac{1}{18}$
3	,,	25	,,	$9\frac{2}{18}$, $10\frac{2}{18}$, $11\frac{2}{18}$, $12\frac{2}{18}$	$+\frac{1}{18}$
4	,,	26	,,	$13\frac{3}{18}$, $14\frac{3}{18}$, $15\frac{3}{18}$, $16\frac{3}{18}$	$+\frac{1}{18}$
5	,,	27	,,	$17\frac{4}{18}$, $18\frac{4}{18}$, $19\frac{4}{18}$, $20\frac{4}{18}$	$+\frac{1}{18}$
6	,,	28	,,	$21\frac{5}{18}$, $22\frac{5}{18}$, $23\frac{5}{18}$, $24\frac{5}{18}$	$+\frac{1}{18}$
7	,,	29	,,	$25\frac{6}{18}$, $26\frac{6}{18}$, $27\frac{6}{18}$, $28\frac{6}{18}$	$+\frac{1}{18}$
8	,,	30	,,	$29\frac{7}{18}$, $30\frac{7}{18}$, $31\frac{7}{18}$, $32\frac{7}{18}$	$+\frac{1}{18}$
9	,,	1	Oct.	$33\frac{8}{18}$, $34\frac{8}{18}$, $35\frac{8}{18}$, $36\frac{8}{18}$	$+\frac{1}{18}$
10	,,	2	,,	$37\frac{9}{18}$, $38\frac{9}{18}$, $39\frac{9}{18}$, $40\frac{9}{18}$	$+\frac{1}{18}$
11	,,	3	,,	$41\frac{0}{18}$, $42\frac{0}{18}$, $43\frac{0}{18}$, $44\frac{0}{18}$	$+\frac{1}{18}$
12	,,	4	,,	$45\frac{1}{18}$, $46\frac{1}{18}$, $47\frac{1}{18}$, $48\frac{1}{18}$	$+\frac{1}{18}$
13	,,	5	,,	$49\frac{2}{18}$, $50\frac{2}{18}$, $51\frac{2}{18}$, $52\frac{2}{18}$	$+\frac{1}{18}$
14	,,	6	,,	$53\frac{3}{18}$, $54\frac{3}{18}$, $55\frac{3}{18}$, $56\frac{3}{18}$	$+\frac{1}{18}$
15	,,	7	,,	$57\frac{4}{18}$, $58\frac{4}{18}$, $59\frac{4}{18}$, $60\frac{4}{18}$	$+\frac{1}{18}$
16	,,	8	,,	$61\frac{5}{18}$, $62\frac{5}{18}$, $63\frac{5}{18}$, $64\frac{5}{18}$	$+\frac{1}{18}$
17	,,	9	,,	$65\frac{6}{18}$, $66\frac{6}{18}$, $67\frac{6}{18}$, $68\frac{6}{18}$	$+\frac{1}{18}$
18	,,	10	,,	$69\frac{7}{18}$, $70\frac{7}{18}$, $71\frac{7}{18}$, $72\frac{7}{18}$	$+\frac{1}{18}$
19	,,	11	,,	$73\frac{8}{18}$, $74\frac{8}{18}$, $75\frac{8}{18}$, $76\frac{8}{18}$	$+\frac{1}{18}$
20	,,	12	,,	$77\frac{9}{18}$, $78\frac{9}{18}$, $79\frac{9}{18}$, $80\frac{9}{18}$	$+\frac{1}{18}$
21	,,	13	,,	$81\frac{20}{18}$, $82\frac{20}{18}$, $83\frac{20}{18}$, $84\frac{20}{18}$	$+\frac{1}{18}$
22	,,	14	,,	$85\frac{21}{18}$, $86\frac{21}{18}$, $87\frac{21}{18}$, $88\frac{21}{18}$	$+\frac{1}{18}$
23	,,	15	,,	$89\frac{22}{18}$, $90\frac{22}{18}$, $91\frac{22}{18}$, $92\frac{22}{18}$	$+\frac{1}{18}$
24	,,	16	,,	$93\frac{23}{18}$, $94\frac{23}{18}$, $95\frac{23}{18}$, $96\frac{23}{18}$	$+\frac{1}{18}$
25	,,	17	,,	$97\frac{24}{18}$, $98\frac{24}{18}$, $99\frac{24}{18}$, $100\frac{24}{18}$	$+\frac{1}{18}$
26	,,	18	,,	$101\frac{25}{18}$, $102\frac{25}{18}$, $103\frac{25}{18}$, $104\frac{25}{18}$	$+\frac{1}{18}$
27	,,	19	,,	$105\frac{26}{18}$, $106\frac{26}{18}$, $107\frac{26}{18}$, $108\frac{26}{18}$	$+\frac{1}{18}$
28	,,	20	,,	$109\frac{27}{18}$, $110\frac{27}{18}$, $111\frac{27}{18}$, $112\frac{27}{18}$	$+\frac{1}{18}$
29	,,	21	,,	$113\frac{28}{18}$, $114\frac{28}{18}$, $115\frac{28}{18}$, $116\frac{28}{18}$	$+\frac{1}{18}$
30	,,	22	,,	$117\frac{29}{18}$, $118\frac{29}{18}$, $119\frac{29}{18}$, $120\frac{29}{18}$	$+\frac{1}{18}$

$120+\frac{30}{18}=121\frac{2}{3}$

Day of Month.	Egyptian Fixed Month.	Day of Month.	English Fixed Month.	The 4 years during which Progressive 1 Thoth, or New Year's Day, falls on same day of the Fixed Clock.
1	Paopi	23	Oct.	$122\frac{2}{3}$, $123\frac{2}{3}$, $124\frac{2}{3}$, $125\frac{2}{3}+\frac{1}{18}$
2	,,	24	,,	$126\frac{13}{18}$
3	,,	25	,,	$130\frac{14}{}$ (N.B.—To save space
4	,,	26	,,	$134\frac{15}{}$ only the first of each
5	,,	27	,,	$138\frac{16}{}$ group of 4 years is
6	,,	28	,,	$142\frac{17}{}$ now indicated and
7	,,	29	,,	$146\frac{18}{}$ only the numerator
8	,,	30	,,	$150\frac{19}{}$ of the 18ths is in
9	,,	31	,,	$154\frac{20}{}$ each case given).
10	,,	1	Nov.	$158\frac{21}{}$
11	,,	2	,,	$162\frac{22}{}$
12	,,	3	,,	$166\frac{23}{}$
13	,,	4	,,	$170\frac{24}{}$
14	,,	5	,,	$174\frac{25}{}$
15	,,	6	,,	$178\frac{26}{}$
16	,,	7	,,	$182\frac{27}{}$
17	,,	8	,,	$186\frac{28}{}$
18	,,	9	,,	$190\frac{29}{}$
19	,,	10	,,	$194\frac{30}{}$
20	,,	11	,,	$198\frac{31}{}$
21	,,	12	,,	$202\frac{32}{}$
22	,,	13	,,	$206\frac{33}{}$
23	,,	14	,,	$210\frac{34}{}$
24	,,	15	,,	$214\frac{35}{}$
25	,,	16	,,	$218\frac{36}{}$
26	,,	17	,,	$222\frac{37}{}$
27	,,	18	,,	$226\frac{38}{}$
28	,,	19	,,	$230\frac{39}{}$
29	,,	20	,,	$234\frac{40}{}$
30	,,	21	,,	$238\frac{41}{18}$, $239\frac{41}{18}$, $240\frac{41}{18}$, $241\frac{41}{18}$, $241+\frac{41}{18}=243\frac{1}{3}$

Day of Month.	Egyptian Fixed Month.	Day of Month.	English Fixed Month.	The 4 years during which Progressive 1 Thoth, or New Year's Day, falls on same day of the Fixed Clock.
1	Athyr	22	Nov.	$244\frac{1}{3}$, $245\frac{1}{3}$, $246\frac{1}{3}$, $247\frac{1}{3}+\frac{1}{18}$
2	,,	23	,,	$248\frac{7}{18}$
3	,,	24	,,	$252\frac{8}{}$
4	,,	25	,,	$256\frac{9}{}$
5	,,	26	,,	$260\frac{10}{}$
6	,,	27	,,	$264\frac{11}{}$
7	,,	28	,,	$268\frac{12}{}$
8	,,	29	,,	$272\frac{13}{}$
9	,,	30	,,	$276\frac{14}{}$
10	,,	1	Dec.	$280\frac{15}{}$
11	,,	2	,,	$284\frac{16}{}$
12	,,	3	,,	$288\frac{17}{}$
13	,,	4	,,	$292\frac{18}{}$
14	,,	5	,,	$296\frac{19}{}$
15	,,	6	,,	$300\frac{20}{}$
16	,,	7	,,	$304\frac{21}{}$
17	,,	8	,,	$308\frac{22}{}$
18	,,	9	,,	$312\frac{23}{}$
19	,,	10	,,	$316\frac{24}{}$
20	,,	11	,,	$320\frac{25}{}$
21	,,	12	,,	$324\frac{26}{}$
22	,,	13	,,	$328\frac{27}{}$
23	,,	14	,,	$332\frac{28}{}$
24	,,	15	,,	$336\frac{29}{}$
25	,,	16	,,	$340\frac{30}{}$
26	,,	17	,,	$344\frac{31}{}$
27	,,	18	,,	$348\frac{32}{}$
28	,,	19	,,	$352\frac{33}{}$
29	,,	20	,,	$356\frac{34}{}$
30	,,	21	,,	$360\frac{35}{18}$, $361\frac{35}{18}$, $362\frac{35}{18}$, $363\frac{35}{18}+\frac{1}{18}$

$$363+\frac{36}{18}=365$$

Day of Month.	Egyptian Fixed Month.	Day of Month.	English Fixed Month.	The 4 years during which Progressive 1 Thoth, or New Year's Day, falls on same day of the Fixed Clock.
1	Khoiak	22	Dec.	366, 367, 368, 369 + $\frac{1}{18}$
2	,,	23	,,	$370\frac{1}{18}$
3	,,	24	,,	$374\frac{2}{}$
4	,,	25	,,	$378\frac{3}{}$
5	,,	26	,,	$383\frac{4}{}$
6	,,	27	,,	$386\frac{5}{}$
7	,,	28	,,	$390\frac{6}{}$
8	,,	29	,,	$394\frac{7}{}$
9	,,	30	,,	$398\frac{8}{}$
10	,,	31	,,	$402\frac{9}{}$
11	,,	1	Jan.	$406\frac{10}{}$
12	,,	2	,,	$410\frac{11}{}$
13	,,	3	,,	$414\frac{12}{}$
14	,,	4	,,	$418\frac{13}{}$
15	,,	5	,,	$422\frac{14}{}$
16	,,	6	,,	$426\frac{15}{}$
17	,,	7	,,	$430\frac{16}{}$
18	,,	8	,,	$434\frac{17}{}$
19	,,	9	,,	$438\frac{18}{}$
20	,,	10	,,	$442\frac{19}{}$
21	,,	11	,,	$446\frac{20}{}$
22	,,	12	,,	$450\frac{21}{}$
23	,,	13	,,	$454\frac{22}{}$
24	,,	14	,,	$458\frac{23}{}$
25	,,	15	,,	$462\frac{24}{}$
26	,,	16	,,	$466\frac{25}{}$
27	,,	17	,,	$370\frac{26}{}$
28	,,	18	,,	$474\frac{27}{}$
29	,,	19	,,	$478\frac{28}{}$
30	,,	20	,,	$482\frac{29}{18}$, $483\frac{29}{18}$, $484\frac{29}{18}$, $485\frac{29}{18}$ + $\frac{1}{18}$

$485 + \frac{30}{18} = 486\frac{2}{3}$

Day of Month.	Egyptian Fixed Month.	Day of Month.	English Fixed Month.	The 4 years during which Progressive 1 Thoth, or New Year's Day, falls on same day of the Fixed Clock.
1	Tybi	21	Jan.	$487\frac{2}{3}$, $488\frac{2}{3}$, $489\frac{2}{3}$, $490\frac{2}{3} + \frac{1}{18}$
2	,,	22	,,	$491\frac{13}{18}$
3	,,	23	,,	$495\frac{14}{18}$
4	,,	24	,,	$499\frac{15}{18}$
5	,,	25	,,	$503\frac{16}{18}$
6	,,	26	,,	$507\frac{17}{18}$
7	,,	27	,,	$511\frac{18}{18}$
8	,,	28	,,	$515\frac{19}{18}$
9	,,	29	,,	$519\frac{20}{18}$
10	,,	30	,,	$523\frac{21}{18}$
11	,,	31	,,	$527\frac{22}{18}$
12	,,	1	Feb.	$531\frac{23}{18}$
13	,,	2	,,	$535\frac{24}{18}$
14	,,	3	,,	$539\frac{25}{18}$
15	,,	4	,,	$543\frac{26}{18}$
16	,,	5	,,	$547\frac{27}{18}$
17	,,	6	,,	$551\frac{28}{18}$
18	,,	7	,,	$555\frac{29}{18}$
19	,,	8	,,	$559\frac{30}{18}$
20	,,	9	,,	$563\frac{31}{18}$
21	,,	10	,,	$567\frac{32}{18}$
22	,,	11	,,	$571\frac{33}{18}$
23	,,	12	,,	$575\frac{34}{18}$
24	,,	13	,,	$579\frac{35}{18}$
25	,,	14	,,	$583\frac{36}{18}$
26	,,	15	,,	$587\frac{37}{18}$
27	,,	16	,,	$591\frac{38}{18}$
28	,,	17	,,	$595\frac{39}{18}$
29	,,	18	,,	$599\frac{40}{18}$
30	,,	19	,,	$603\frac{41}{18}$, $604\frac{41}{18}$, $605\frac{41}{18}$, $606\frac{41}{18} + \frac{1}{18}$

$$606 + \frac{42}{18} = 608\frac{1}{3}$$

Day of Month.	Egyptian Fixed Month.	Day of Month.	English Fixed Month.	The 4 years during which Progressive 1 Thoth, or New Year's Day, falls on same day of the Fixed Clock.
1	Mechir	20	Feb.	$609\frac{1}{3}$, $610\frac{1}{3}$, $611\frac{1}{3}$, $612\frac{1}{3}+\frac{1}{18}$
2	,,	21	,,	$613\frac{7}{18}$
3	,,	22	,,	$617\frac{8}{18}$
4	,,	23	,,	$621\frac{9}{18}$
5	,,	24	,,	$625\frac{10}{18}$
6	,,	25	,,	$629\frac{11}{18}$
7	,,	26	,,	$633\frac{12}{18}$
8	,,	27	,,	$637\frac{13}{18}$
9	,,	28	,,	$641\frac{14}{18}$
10	,,	1	Mar.	$645\frac{15}{18}$
11	,,	2	,,	$649\frac{16}{18}$
12	,,	3	,,	$653\frac{17}{18}$
13	,,	4	,,	$657\frac{18}{18}$
14	,,	5	,,	$661\frac{19}{18}$
15	,,	6	,,	$665\frac{20}{18}$
16	,,	7	,,	$669\frac{21}{18}$
17	,,	8	,,	$673\frac{22}{18}$
18	,,	9	,,	$677\frac{23}{18}$
19	,,	10	,,	$681\frac{24}{18}$
20	,,	11	,,	$685\frac{25}{18}$
21	,,	12	,,	$689\frac{26}{18}$
22	,,	13	,,	$693\frac{27}{18}$
23	,,	14	,,	$697\frac{28}{18}$
24	,,	15	,,	$701\frac{29}{18}$
25	,,	16	,,	$705\frac{30}{18}$
26	,,	17	,,	$709\frac{31}{18}$
27	,,	18	,,	$713\frac{32}{18}$
28	,,	19	,,	$717\frac{33}{18}$
29	,,	20	,,	$721\frac{34}{18}$
30	,,	21	,,	$725\frac{35}{18}$, $726\frac{35}{18}$, $727\frac{35}{18}$, $728\frac{35}{18}+\frac{1}{18}$

$$728+\tfrac{36}{18}=730$$

Day of Month.	Egyptian Fixed Month.	Day of Month.	English Fixed Month.	The 4 years during which Progressive 1 Thoth, or New Year's Day, falls on same day of the Fixed Clock. 731, 732, 733, $734 + \frac{1}{18}$
1	Phamenoth	22	Mar.	
2	,,	23	,,	$735\frac{1}{18}$
3	,,	24	,,	$739\frac{2}{}$
4	,,	25	,,	$743\frac{3}{}$
5	,,	26	,,	$747\frac{4}{}$
6	,,	27	,,	$751\frac{5}{}$
7	,,	28	,,	$755\frac{6}{}$
8	,,	29	,,	$759\frac{7}{}$
9	,,	30	,,	$763\frac{8}{}$
10	,,	31	,,	$767\frac{9}{}$
11	,,	1	April	$771\frac{10}{}$
12	,,	2	,,	$775\frac{11}{}$
13	,,	3	,,	$779\frac{12}{}$
14	,,	4	,,	$783\frac{13}{}$
15	,,	5	,,	$787\frac{14}{}$
16	,,	6	,,	$791\frac{15}{}$
17	,,	7	,,	$795\frac{16}{}$
18	,,	8	,,	$799\frac{17}{}$
19	,,	9	,,	$803\frac{18}{}$
20	,,	10	,,	$807\frac{19}{}$
21	,,	11	,,	$811\frac{20}{}$
22	,,	12	,,	$815\frac{21}{}$
23	,,	13	,,	$819\frac{22}{}$
24	,,	14	,,	$823\frac{23}{}$
25	,,	15	,,	$827\frac{24}{}$
26	,,	16	,,	$831\frac{25}{}$
27	,,	17	,,	$835\frac{26}{}$
28	,,	18	,,	$839\frac{27}{}$
29	,,	19	,,	$843\frac{28}{}$
30	,,	20	,,	$847\frac{29}{18}, 848\frac{29}{18}, 849\frac{29}{18}, 850\frac{29}{18} + \frac{1}{18}$

$$850 + \frac{30}{18} = 851\frac{2}{3}$$

Day of Month.	Egyptian Fixed Month.	Day of Month.	English Fixed Month.	The 4 years during which Progressive 1 Thoth, or New Year's Day, falls on same day of Fixed Clock.
1	Pharmuthi	21	April	$852\frac{2}{3}$, $853\frac{2}{3}$, $854\frac{2}{3}$, $855\frac{2}{3}+\frac{1}{18}$
2	,,	22	,,	$856\frac{3}{18}$
3	,,	23	,,	860^{14}
4	,,	24	,,	864^{15}
5	,,	25	,,	868^{16}
6	,,	26	,,	872^{17}
7	,,	27	,,	876^{18}
8	,,	28	,,	880^{19}
9	,,	29	,,	884^{20}
10	,,	30	,,	888^{21}
11	,,	1	May	892^{22}
12	,,	2	,,	896^{23}
13	,,	3	,,	900^{24}
14	,,	4	,,	904^{25}
15	,,	5	,,	908^{26}
16	,,	6	,,	912^{27}
17	,,	7	,,	916^{28}
18	,,	8	,,	920^{29}
19	,,	9	,,	924^{30}
20	,,	10	,,	928^{31}
21	,,	11	,,	932^{32}
22	,,	12	,,	936^{33}
23	,,	13	,,	940^{34}
24	,,	14	,,	944^{35}
25	,,	15	,,	948^{36}
26	,,	16	,,	952^{37}
27	,,	17	,,	956^{38}
28	,,	18	,,	960^{39}
29	,,	19	,,	964^{40}
30	,,	20	,,	$968\frac{1}{18}$, $969\frac{1}{18}$, $970\frac{1}{18}$, $971\frac{1}{18}+\frac{1}{18}$

$971+\frac{2}{18}=973\frac{1}{3}$

Day of Month.	Egyptian Fixed Month.	Day of Month.	English Fixed Month.	The 4 years during which Progressive 1 Thoth, or New Year's Day, falls on same day of the Fixed Clock.			
1	Pakhons	21	May	$974\frac{1}{3}$,	$975\frac{1}{3}$,	$976\frac{1}{3}$,	$977\frac{1}{3}+\frac{1}{18}$
2	,,	22	,,	$978\frac{7}{18}$			
3	,,	23	,,	$982\frac{8}{}$			
4	,,	24	,,	$986\frac{9}{}$			
5	,,	25	,,	$990\frac{10}{}$			
6	,,	26	,,	$994\frac{11}{}$			
7	,,	27	,,	$998\frac{12}{}$			
8	,,	28	,,	$1002\frac{13}{}$			
9	,,	29	,,	$1006\frac{14}{}$			
10	,,	30	,,	$1010\frac{15}{}$			
11	,,	31	,,	$1014\frac{16}{}$			
12	,,	1	June	$1018\frac{17}{}$			
13	,,	2	,,	$1022\frac{18}{}$			
14	,,	3	,,	$1026\frac{19}{}$			
15	,,	4	,,	$1030\frac{20}{}$			
16	,,	5	,,	$1034\frac{21}{}$			
17	,,	6	,,	$1038\frac{22}{}$			
18	,,	7	,,	$1042\frac{23}{}$			
19	,,	8	,,	$1046\frac{24}{}$			
20	,,	9	,,	$1050\frac{25}{}$			
21	,,	10	,,	$1054\frac{26}{}$			
22	,,	11	,,	$1058\frac{27}{}$			
23	,,	12	,,	$1062\frac{28}{}$			
24	,,	13	,,	$1066\frac{29}{}$			
25	,,	14	,,	$1070\frac{30}{}$			
26	,,	15	,,	$1074\frac{31}{}$			
27	,,	16	,,	$1078\frac{32}{}$			
28	,,	17	,,	$1082\frac{33}{}$			
29	,,	18	,,	$1086\frac{34}{}$			
30	,,	19	,,	$1090\frac{35}{18}$,	$1091\frac{35}{18}$,	$1092\frac{35}{18}$,	$1093\frac{35}{18}+\frac{1}{18}$

$$1093+\tfrac{36}{18}=1095$$

Day of Month.	Egyptian Fixed Month.	Day of Month.	English Fixed Month.	The 4 years during which Progressive 1 Thoth, or New Year's Day, falls on same day of the Fixed Clock.			
				1096,	1097,	1098,	1099 + $\frac{1}{18}$
1	Paoni	20	June	1096,			
2	,,	21	,,	1100 $\frac{1}{18}$			
3	,,	22	,,	1104 $\frac{2}{18}$			
4	,,	23	,,	1108 $\frac{3}{18}$			
5	,,	24	,,	1112 $\frac{4}{18}$			
6	,,	25	,,	1116 $\frac{5}{18}$			
7	,,	26	,,	1120 $\frac{6}{18}$			
8	,,	27	,,	1124 $\frac{7}{18}$			
9	,,	28	,,	1128 $\frac{8}{18}$			
10	,,	29	,,	1132 $\frac{9}{18}$			
11	,,	30	,,	1136 $\frac{10}{18}$			
12	,,	1	July	1140 $\frac{11}{18}$			
13	,,	2	,,	1144 $\frac{12}{18}$			
14	,,	3	,,	1148 $\frac{13}{18}$			
15	,,	4	,,	1152 $\frac{14}{18}$			
16	,,	5	,,	1156 $\frac{15}{18}$			
17	,,	6	,,	1160 $\frac{16}{18}$			
18	,,	7	,,	1164 $\frac{17}{18}$			
19	,,	8	,,	1168 $\frac{18}{18}$			
20	,,	9	,,	1172 $\frac{19}{18}$			
21	,,	10	,,	1176 $\frac{20}{18}$			
22	,,	11	,,	1180 $\frac{21}{18}$			
23	,,	12	,,	1184 $\frac{22}{18}$			
24	,,	13	,,	1188 $\frac{23}{18}$			
25	,,	14	,,	1192 $\frac{24}{18}$			
26	,,	15	,,	1196 $\frac{25}{18}$			
27	,,	16	,,	1200 $\frac{26}{18}$			
28	,,	17	,,	1204 $\frac{27}{18}$			
29	,,	18	,,	1208 $\frac{28}{18}$			
30	,,	19	,,	1212 $\frac{29}{18}$,	1213 $\frac{29}{18}$,	1214 $\frac{29}{18}$,	1215 $\frac{29}{18}$ + $\frac{1}{18}$

$1215 + \frac{30}{18} = 1216\frac{2}{3}$

Day of Month.	Egyptian Fixed Month.	Day of Month.	English Fixed Month.	The 4 years during which Progressive 1 Thoth, or New Year's Day, falls on same day of the Fixed Clock.
1	Epiphi	20	July	$1217\frac{2}{3}$, $1218\frac{2}{3}$, $1219\frac{2}{3}$, $1220\frac{2}{3}+\frac{1}{18}$
2	,,	21	,,	$1221\frac{3}{18}$
3	,,	22	,,	$1225\frac{14}{}$
4	,,	23	,,	$1229\frac{15}{}$
5	,,	24	,,	$1233\frac{16}{}$
6	,,	25	,,	$1237\frac{17}{}$
7	,,	26	,,	$1241\frac{18}{}$
8	,,	27	,,	$1245\frac{19}{}$
9	,,	28	,,	$1249\frac{20}{}$
10	,,	29	,,	$1253\frac{21}{}$
11	,,	30	,,	$1257\frac{22}{}$
12	,,	31	,,	$1261\frac{23}{}$
13	,,	1	Aug.	$1265\frac{24}{}$
14	,,	2	,,	$1269\frac{25}{}$
15	,,	3	,,	$1273\frac{26}{}$
16	,,	4	,,	$1277\frac{27}{}$
17	,,	5	,,	$1281\frac{28}{}$
18	,,	6	,,	$1285\frac{29}{}$
19	,,	7	,,	$1289\frac{30}{}$
20	,,	8	,,	$1293\frac{31}{}$
21	,,	9	,,	$1297\frac{32}{}$
22	,,	10	,,	$1301\frac{33}{}$
23	,,	11	,,	$1305\frac{34}{}$
24	,,	12	,,	$1309\frac{35}{}$
25	,,	13	,,	$1313\frac{36}{}$
26	,,	14	,,	$1317\frac{37}{}$
27	,,	15	,,	$1321\frac{38}{}$
28	,,	16	,,	$1325\frac{39}{}$
29	,,	17	,,	$1329\frac{40}{}$
30	,,	18	,,	$1333\frac{41}{18}$, $1334\frac{41}{18}$, $1335\frac{1}{18}$, $1336\frac{41}{18}+\frac{1}{18}$

$$1336+\frac{42}{18}=1338\frac{1}{3}$$

Day of Month.	Egyptian Fixed Month.	Day of Month.	English Fixed Month.	The 4 years during which Progressive 1 Thoth, or New Year's Day, falls on same day of the Fixed Clock.
1	Mesorē	19	Aug.	$1339\frac{1}{3}$, $1340\frac{1}{3}$, $1341\frac{1}{3}$, $1342\frac{1}{3}+\frac{1}{18}$
2	,,	20	,,	$1343\frac{7}{18}$
3	,,	21	,,	$1347\frac{8}{}$
4	,,	22	,,	$1351\frac{9}{}$
5	,,	23	,,	$1355\frac{10}{}$
6	,,	24	,,	$1359\frac{11}{}$
7	,,	25	,,	$1363\frac{12}{}$
8	,,	26	,,	$1367\frac{13}{}$
9	,,	27	,,	$1371\frac{14}{}$
10	,,	28	,,	$1375\frac{15}{}$
11	,,	29	,,	$1379\frac{16}{}$
12	,,	30	,,	$1383\frac{17}{}$
13	,,	31	,,	$1387\frac{18}{}$
14	,,	1	Sept.	$1391\frac{19}{}$
15	,,	2	,,	$1395\frac{20}{}$
16	,,	3	,,	$1399\frac{21}{}$
17	,,	4	,,	$1403\frac{22}{}$
18	,,	5	,,	$1407\frac{23}{}$
19	,,	6	,,	$1411\frac{24}{}$
20	,,	7	,,	$1415\frac{25}{}$
21	,,	8	,,	$1419\frac{26}{}$
22	,,	9	,,	$1423\frac{27}{}$
23	,,	10	,,	$1427\frac{28}{}$
24	,,	11	,,	$1431\frac{29}{}$
25	,,	12	,,	$1435\frac{30}{}$
26	,,	13	,,	$1439\frac{31}{}$
27	,,	14	,,	$1443\frac{32}{}$
28	,,	15	,,	$1447\frac{33}{}$
29	,,	16	,,	$1451\frac{34}{}$
30	,,	17	,,	$1455\frac{35}{18}$, $1456\frac{35}{18}$, $1457\frac{35}{18}$, $1458\frac{35}{18}+\frac{1}{18}$

$1458+\frac{36}{18}=1460$. Close of Cycle.

1	Epagomenal.	18	Sept.	
2	,,	19	,,	
3	,,	20	,,	
4	,,	21	,,	
5	,,	22	,,	Close of Natural Year.

TABLE II

SHOWING where P. 1 Thoth, or New Year's Day, falls for every Rising of Sirius. True Time will, under normal conditions, be one of the 4 years indicated in TABLE I or TABLE III for each date that P. 1 Thoth falls on.

When P. 1 Thoth falls	P. 1 Epiphi falls	Rising originally at F. 1 Epiphi falls
F. 1 Thoth	F. 1 Epiphi	P. 1 Epiphi
2 ,,	2 ,,	30 Paoni
3 ,,	3 ,,	29 ,,
4 ,,	4 ,,	28 ,,
5 ,,	5 ,,	27 ,,
6 ,,	6 ,,	26 ,,
7 ,,	7 ,,	25 ,,
8 ,,	8 ,,	24 ,,
9 ,,	9 ,,	23 ,,
10 ,,	10 ,,	22 ,,
11 ,,	11 ,,	21 ,,
12 ,,	12 ,,	20 ,,
13 ,,	13 ,,	19 ,,
14 ,,	14 ,,	18 ,,
15 ,,	15 ,,	17 ,,
16 ,,	16 ,,	16 ,,
17 ,,	17 ,,	15 ,,
18 ,,	18 ,,	14 ,,
19 ,,	19 ,,	13 ,,
20 ,,	20 ,,	12 ,,
21 ,,	21 ,,	11 ,,
22 ,,	22 ,,	10 ,,
23 ,,	23 ,,	9 ,,
24 ,,	24 ,,	8 ,,
25 ,,	25 ,,	7 ,,
26 ,,	26 ,,	6 ,,
27 ,,	27 ,,	5 ,,
28 ,,	28 ,,	4 ,,
29 ,,	29 ,,	3 ,,
30 ,,	30 ,,	2 ,,

When P. 1 Thoth falls	P. 1 Epiphi falls	Rising originally at F. 1 Epiphi falls
F. 1 Paopi	F. 1 Mesorē	P. 1 Paoni
2 ,,	2 ,,	30 Pakhons
3 ,,	3 ,,	29 ,,
4 ,,	4 ,,	28 ,,
5 ,,	5 ,,	27 ,,
6 ,,	6 ,,	26 ,,
7 ,,	7 ,,	25 ,,
8 ,,	8 ,,	24 ,,
9 ,,	9 ,,	23 ,,
10 ,,	10 ,,	22 ,,
11 ,,	11 ,,	21 ,,
12 ,,	12 ,,	20 ,,
13 ,,	13 ,,	19 ,,
14 ,,	14 ,,	18 ,,
15 ,,	15 ,,	17 ,,
16 ,,	16 ,,	16 ,,
17 ,,	17 ,,	15 ,,
18 ,,	18 ,,	14 ,,
19 ,,	19 ,,	13 ,,
20 ,,	20 ,,	12 ,,
21 ,,	21 ,,	11 ,,
22 ,,	22 ,,	10 ,,
23 ,,	23 ,,	9 ,,
24 ,,	24 ,,	8 ,,
25 ,,	25 ,,	7 ,,
26 ,,	26 ,,	6 ,,
27 ,,	27 ,,	5 ,,
28 ,,	28 ,,	4 ,,
29 ,,	29 ,,	3 ,,
30 ,,	30 ,,	2 ,,

When P. 1 Thoth falls	P. 1 Epiphi falls	Rising originally at F. 1 Epiphi falls
F. 1 Athyr	F. 1 Thoth	P. 1 Pakhons
2 ,,	2 ,,	30 Pharmuthi
3 ,,	3 ,,	29 ,,
4 ,,	4 ,,	28 ,,
5 ,,	5 ,,	27 ,,
6 ,,	6 ,,	26 ,,
7 ,,	7 ,,	25 ,,
8 ,,	8 ,,	24 ,,
9 ,,	9 ,,	23 ,,
10 ,,	10 ,,	22 ,,
11 ,,	11 ,,	21 ,,
12 ,,	12 ,,	20 ,,
13 ,,	13 ,,	19 ,,
14 ,,	14 ,,	18 ,,
15 ,,	15 ,,	17 ,,
16 ,,	16 ,,	16 ,,
17 ,,	17 ,,	15 ,,
18 ,,	18 ,,	14 ,,
19 ,,	19 ,,	13 ,,
20 ,,	20 ,,	12 ,,
21 ,,	21 ,,	11 ,,
22 ,,	22 ,,	10 ,,
23 ,,	23 ,,	9 ,,
24 ,,	24 ,,	8 ,,
25 ,,	25 ,,	7 ,,
26 ,,	26 ,,	6 ,,
27 ,,	27 ,,	5 ,,
28 ,,	28 ,,	4 ,,
29 ,,	29 ,,	3 ,,
30 ,,	30 ,,	2 ,,

When P. 1 Thoth falls	P. 1 Epiphi falls	Rising originally at F. 1 Epiphi falls
F. 1 Khoiak	F. 1 Paopi	P. 1 Pharmuthi
2 ,,	2 ,,	30 Phamenoth
3 ,,	3 ,,	29 ,,
4 ,,	4 ,,	28 ,,
5 ,,	5 ,,	27 ,,
6 ,,	6 ,,	26 ,,
7 ,,	7 ,,	25 ,,
8 ,,	8 ,,	24 ,,
9 ,,	9 ,,	23 ,,
10 ,,	10 ,,	22 ,,
11 ,,	11 ,,	21 ,,
12 ,,	12 ,,	20 ,,
13 ,,	13 ,,	19 ,,
14 ,,	14 ,,	18 ,,
15 ,,	15 ,,	17 ,,
16 ,,	16 ,,	16 ,,
17 ,,	17 ,,	15 ,,
18 ,,	18 ,,	14 ,,
19 ,,	19 ,,	13 ,,
20 ,,	20 ,,	12 ,,
21 ,,	21 ,,	11 ,,
22 ,,	22 ,,	10 ,,
23 ,,	23 ,,	9 ,,
24 ,,	24 ,,	8 ,,
25 ,,	25 ,,	7 ,,
26 ,,	26 ,,	6 ,,
27 ,,	27 ,,	5 ,,
28 ,,	28 ,,	4 ,,
29 ,,	29 ,,	3 ,,
30 ,,	30 ,,	2 ,,

When P. 1 Thoth falls	P. 1 Epiphi falls	Rising originally at F. 1 Epiphi falls
F. 1 Phamenoth	F. 1 Tybi	P. 1 Tybi
2 ,,	2 ,,	30 Khoiak
3 ,,	3 ,,	29 ,,
4 ,,	4 ,,	28 ,,
5 ,,	5 ,,	27 ,,
6 ,,	6 ,,	26 ,,
7 ,,	7 ,,	25 ,,
8 ,,	8 ,,	24 ,,
9 ,,	9 ,,	23 ,,
10 ,,	10 ,,	22 ,,
11 ,,	11 ,,	21 ,,
12 ,,	12 ,,	20 ,,
13 ,,	13 ,,	19 ,,
14 ,,	14 ,,	18 ,,
15 ,,	15 ,,	17 ,,
16 ,,	16 ,,	16 ,,
17 ,,	17 ,,	15 ,,
18 ,,	18 ,,	14 ,,
19 ,,	19 ,,	13 ,,
20 ,,	20 ,,	12 ,,
21 ,,	21 ,,	11 ,,
22 ,,	22 ,,	10 ,,
23 ,,	23 ,,	9 ,,
24 ,,	24 ,,	8 ,,
25 ,,	25 ,,	7 ,,
26 ,,	26 ,,	6 ,,
27 ,,	27 ,,	5 ,,
28 ,,	28 ,,	4 ,,
29 ,,	29 ,,	3 ,,
30 ,,	30 ,,	2 ,,

When P. 1 Thoth falls	P. 1 Epiphi falls	Rising originally at F. 1 Epiphi falls
F. 1 Pharmuthi	F. 1 Mechir	P. 1 Khoiak
2 ,,	2 ,,	30 Athyr
3 ,,	3 ,,	29 ,,
4 ,,	4 ,,	28 ,,
5 ,,	5 ,,	27 ,,
6 ,,	6 ,,	26 ,,
7 ,,	7 ,,	25 ,,
8 ,,	8 ,,	24 ,,
9 ,,	9 ,,	23 ,,
10 ,,	10 ,,	22 ,,
11 ,,	11 ,,	21 ,,
12 ,,	12 ,,	20 ,,
13 ,,	13 ,,	19 ,,
14 ,,	14 ,,	18 ,,
15 ,,	15 ,,	17 ,,
16 ,,	16 ,,	16 ,,
17 ,,	17 ,,	15 ,,
18 ,,	18 ,,	14 ,,
19 ,,	19 ,,	13 ,,
20 ,,	20 ,,	12 ,,
21 ,,	21 ,,	11 ,,
22 ,,	22 ,,	10 ,,
23 ,,	23 ,,	9 ,,
24 ,,	24 ,,	8 ,,
25 ,,	25 ,,	7 ,,
26 ,,	26 ,,	6 ,,
27 ,,	27 ,,	5 ,,
28 ,,	28 ,,	4 ,,
29 ,,	29 ,,	3 ,,
30 ,,	30 ,,	2 ,,

When P. 1 Thoth falls	P. 1 Epiphi falls	Rising originally at F. 1 Epiphi falls
F. 1 Pakhons	F. 1 Phamenoth	P. 1 Athyr
2 ,,	2 ,,	30 Paopi
3 ,,	3 ,,	29 ,,
4 ,,	4 ,,	28 ,,
5 ,,	5 ,,	27 ,,
6 ,,	6 ,,	26 ,,
7 ,,	7 ,,	25 ,,
8 ,,	8 ,,	24 ,,
9 ,,	9 ,,	23 ,,
10 ,,	10 ,,	22 ,,
11 ,,	11 ,,	21 ,,
12 ,,	12 ,,	20 ,,
13 ,,	13 ,,	19 ,,
14 ,,	14 ,,	18 ,,
15 ,,	15 ,,	17 ,,
16 ,,	16 ,,	16 ,,
17 ,,	17 ,,	15 ,,
18 ,,	18 ,,	14 ,,
19 ,,	19 ,,	13 ,,
20 ,,	20 ,,	12 ,,
21 ,,	21 ,,	11 ,,
22 ,,	22 ,,	10 ,,
23 ,,	23 ,,	9 ,,
24 ,,	24 ,,	8 ,,
25 ,,	25 ,,	7 ,,
26 ,,	26 ,,	6 ,,
27 ,,	27 ,,	5 ,,
28 ,,	28 ,,	4 ,,
29 ,,	29 ,,	3 ,,
30 ,,	30 ,,	2 ,,

When P. 1 Thoth falls	P. 1 Epiphi falls	Rising originally at F. 1 Epiphi falls
F. 1 Paoni	F. 1 Pharmuthi	P. 1 Paopi
2 ,,	2 ,,	30 Thoth
3 ,,	3 ,,	29 ,,
4 ,,	4 ,,	28 ,,
5 ,,	5 ,,	27 ,,
6 ,,	6 ,,	26 ,,
7 ,,	7 ,,	25 ,,
8 ,,	8 ,,	24 ,,
9 ,,	9 ,,	23 ,,
10 ,,	10 ,,	22 ,,
11 ,,	11 ,,	21 ,,
12 ,,	12 ,,	20 ,,
13 ,,	13 ,,	19 ,,
14 ,,	14 ,,	18 ,,
15 ,,	15 ,,	17 ,,
16 ,,	16 ,,	16 ,,
17 ,,	17 ,,	15 ,,
18 ,,	18 ,,	14 ,,
19 ,,	19 ,,	13 ,,
20 ,,	20 ,,	12 ,,
21 ,,	21 ,,	11 ,,
22 ,,	22 ,,	10 ,,
23 ,,	23 ,,	9 ,,
24 ,,	24 ,,	8 ,,
25 ,,	25 ,,	7 ,,
26 ,,	26 ,,	6 ,,
27 ,,	27 ,,	5 ,,
28 ,,	28 ,,	4 ,,
29 ,,	29 ,,	3 ,,
30 ,,	30 ,,	2 ,,

When P. 1 Thoth falls	P. 1 Epiphi falls	Rising originally at F. 1 Epiphi falls
F. 1 Epiphi	F. 1 Pakhons	P. 1 Thoth
2 ,,	2 ,,	30 Mesorē
3 ,,	3 ,,	29 ,,
4 ,,	4 ,,	28 ,,
5 ,,	5 ,,	27 ,,
6 ,,	6 ,,	26 ,,
7 ,,	7 ,,	25 ,,
8 ,,	8 ,,	24 ,,
9 ,,	9 ,,	23 ,,
10 ,,	10 ,,	22 ,,
11 ,,	11 ,,	21 ,,
12 ,,	12 ,,	20 ,,
13 ,,	13 ,,	19 ,,
14 ,,	14 ,,	18 ,,
15 ,,	15 ,,	17 ,,
16 ,,	16 ,,	16 ,,
17 ,,	17 ,,	15 ,,
18 ,,	18 ,,	14 ,,
19 ,,	19 ,,	13 ,,
20 ,,	20 ,,	12 ,,
21 ,,	21 ,,	11 ,,
22 ,,	22 ,,	10 ,,
23 ,,	23 ,,	9 ,,
24 ,,	24 ,,	8 ,,
25 ,,	25 ,,	7 ,,
26 ,,	26 ,,	6 ,,
27 ,,	27 ,,	5 ,,
28 ,,	28 ,,	4 ,,
29 ,,	29 ,,	3 ,,
30 ,,	30 ,,	2 ,,

When P. 1 Thoth falls	P. 1 Epiphi falls	Rising originally F. 1 Epiphi falls
F. 1 Mesorē	F. 1 Paoni	P. 1 Mesorē
2 ,,	2 ,,	30 Epiphi
3 ,,	3 ,,	29 ,,
4 ,,	4 ,,	28 ,,
5 ,,	5 ,,	27 ,,
6 ,,	6 ,,	26 ,,
7 ,,	7 ,,	25 ,,
8 ,,	8 ,,	24 ,,
9 ,,	9 ,,	23 ,,
10 ,,	10 ,,	22 ,,
11 ,,	11 ,,	21 ,,
12 ,,	12 ,,	20 ,,
13 ,,	13 ,,	19 ,,
14 ,,	14 ,,	18 ,,
15 ,,	15 ,,	17 ,,
16 ,,	16 ,,	16 ,,
17 ,,	17 ,,	15 ,,
18 ,,	18 ,,	14 ,,
19 ,,	19 ,,	13 ,,
20 ,,	20 ,,	12 ,,
21 ,,	21 ,,	11 ,,
22 ,,	22 ,,	10 ,,
23 ,,	23 ,,	9 ,,
24 ,,	24 ,,	8 ,,
25 ,,	25 ,,	7 ,,
26 ,,	26 ,,	6 ,,
27 ,,	27 ,,	5 ,,
28 ,,	28 ,,	4 ,,
29 ,,	29 ,,	3 ,,
30 ,,	30 ,,	2 ,,

TABLE III

SHOWING the first Cyclical Division or Year out of every 4 available for any Rising of Sirius of which the month and day of the month are given. These TABLES are based on an assumption that the mutual relations of the several Cyclical Clocks remain normal. Owing, however, to the gradual and Cyclical changes in the rate of NATURAL or SOTHIC Time, they will not always yield True Time, and the needful allowance will then have to be made. But, apart from this, they are for purposes of Chronological analysis and synthesis correct.

When P. 1 Thoth falls	Rising originally at F. 1 Epiphi falls	Apparent Time for Rising is	True Time is normally
F. 1 Thoth	P. 1 Epiphi	Cyc. Yr. $1216\frac{2}{3}$	Cyc. Yr. 0
2 ,,	30 Paoni	,, $1220\frac{13}{18}$	,, $4\frac{1}{18}$
3 ,,	29 ,,	,, $1224\frac{14}{18}$	,, $8\frac{2}{18}$
4 ,,	28 ,,	,, $1228\frac{15}{18}$	,, $12\frac{3}{18}$
5 ,,	27 ,,	,, $1232\frac{16}{18}$	,, $16\frac{4}{18}$
6 ,,	26 ,,	,, $1236\frac{17}{18}$	,, $20\frac{5}{18}$
7 ,,	25 ,,	,, 1241	,, $24\frac{6}{18}$
8 ,,	24 ,,	,, $1245\frac{1}{18}$	,, $28\frac{7}{18}$
9 ,,	23 ,,	,, $1249\frac{2}{18}$	,, $32\frac{8}{18}$
10 ,,	22 ,,	,, $1253\frac{3}{18}$	,, $36\frac{9}{18}$
11 ,,	21 ,,	,, $1257\frac{4}{18}$	,, $40\frac{10}{18}$
12 ,,	20 ,,	,, $1261\frac{5}{18}$	,, $44\frac{11}{18}$
13 ,,	19 ,,	,, $1265\frac{6}{18}$	,, $48\frac{12}{18}$
14 ,,	18 ,,	,, $1269\frac{7}{18}$	,, $52\frac{13}{18}$
15 ,,	17 ,,	,, $1273\frac{8}{18}$	,, $56\frac{14}{18}$
16 ,,	16 ,,	,, $1277\frac{9}{18}$	,, $60\frac{15}{18}$
17 ,,	15 ,,	,, $1281\frac{10}{18}$	,, $64\frac{16}{18}$
18 ,,	14 ,,	,, $1285\frac{11}{18}$	,, $68\frac{17}{18}$
19 ,,	13 ,,	,, $1289\frac{12}{18}$	,, 73
20 ,,	12 ,,	,, $1293\frac{13}{18}$	,, $77\frac{1}{18}$
21 ,,	11 ,,	,, $1297\frac{14}{18}$	,, $81\frac{2}{18}$
22 ,,	10 ,,	,, $1301\frac{15}{18}$	,, $85\frac{3}{18}$
23 ,,	9 ,,	,, $1305\frac{16}{18}$	,, $89\frac{4}{18}$
24 ,,	8 ,,	,, $1309\frac{17}{18}$	,, $93\frac{5}{18}$
25 ,,	7 ,,	,, 1314	,, $97\frac{6}{18}$
26 ,,	6 ,,	,, $1318\frac{1}{18}$	,, $101\frac{7}{18}$
27 ,,	5 ,,	,, $1322\frac{2}{18}$	,, $105\frac{8}{18}$
28 ,,	4 ,,	,, $1326\frac{3}{18}$	,, $109\frac{9}{18}$
29 ,,	3 ,,	,, $1330\frac{4}{18}$	,, $113\frac{10}{18}$
30 ,,	2 ,,	,, $1334\frac{5}{18}$	,, $117\frac{11}{18}$

When P. 1 Thoth falls	Rising originally at F. 1 Epiphi falls	Apparent Time for Rising is	True Time is normally
F. 1 Paopi	P. 1 Paoni	Cyc. Yr. $1338\frac{6}{}$	Cyc. Yr. $121\frac{3}{8}$
2 ,,	30 Pakhons	,, $1342\frac{7}{}$	,, $125\frac{3}{8}\frac{3}{8}$
3 ,,	29 ,,	,, $1346\frac{8}{}$	,, $129\frac{14}{}$
4 ,,	28 ,,	,, $1350\frac{9}{}$	,, $133\frac{15}{}$
5 ,,	27 ,,	,, $1354\frac{10}{}$	,, $137\frac{16}{}$
6 ,,	26 ,,	,, $1358\frac{11}{}$	,, $141\frac{17}{}$
7 ,,	25 ,,	,, $1362\frac{12}{}$	,, 146
8 ,,	24 ,,	,, $1366\frac{13}{}$	,, $150\frac{1}{}$
9 ,,	23 ,,	,, $1370\frac{14}{}$	,, $154\frac{2}{}$
10 ,,	22 ,,	,, $1374\frac{15}{}$	,, $158\frac{3}{}$
11 ,,	21 ,,	,, $1378\frac{16}{}$	,, $162\frac{4}{}$
12 ,,	20 ,,	,, $1382\frac{17}{}$	,, $166\frac{5}{}$
13 ,,	19 ,,	,, 1387	,, $170\frac{6}{}$
14 ,,	18 ,,	,, $1391\frac{1}{}$	,, $174\frac{7}{}$
15 ,,	17 ,,	,, $1395\frac{2}{}$	,, $178\frac{8}{}$
16 ,,	16 ,,	,, $1399\frac{3}{}$	,, $182\frac{9}{}$
17 ,,	15 ,,	,, $1403\frac{4}{}$	,, $186\frac{10}{}$
18 ,,	14 ,,	,, $1407\frac{5}{}$	,, $190\frac{11}{}$
19 ,,	13 ,,	,, $1411\frac{6}{}$	,, $194\frac{12}{}$
20 ,,	12 ,,	,, $1415\frac{7}{}$	,, $198\frac{13}{}$
21 ,,	11 ,,	,, $1419\frac{8}{}$	,, $202\frac{14}{}$
22 ,,	10 ,,	,, $1423\frac{9}{}$	,, $206\frac{15}{}$
23 ,,	9 ,,	,, $1427\frac{10}{}$	,, $210\frac{16}{}$
24 ,,	8 ,,	,, $1431\frac{11}{}$	,, $214\frac{17}{}$
25 ,,	7 ,,	,, $1435\frac{12}{}$	,, 219
26 ,,	6 ,,	,, $1439\frac{13}{}$	,, $223\frac{1}{}$
27 ,,	5 ,,	,, $1443\frac{14}{}$	,, $227\frac{2}{}$
28 ,,	4 ,,	,, $1447\frac{15}{}$	,, $231\frac{3}{}$
29 ,,	3 ,,	,, $1451\frac{16}{}$	,, $235\frac{4}{}$
30 ,,	2 ,,	,, $1455\frac{17}{}$	,, $239\frac{5}{}$

When P. 1 Thoth falls	Rising originally at F. 1 Epiphi falls	Apparent Time for Rising is	True Time is normally
F. 1 Athyr	P. 1 Pakhons	Cyc. Yr. 1460	Cyc. Yr. 243¼
2 ,,	30 Pharmuthi	,, 4 1	,, 247 7/15
3 ,,	29 ,,	,, 8 2	,, 251 8
4 ,,	28 ,,	,, 12 3	,, 255 9
5 ,,	27 ,,	,, 16 4	,, 259 10
6 ,,	26 ,,	,, 20 5	,, 263 11
7 ,,	25 ,,	,, 24 6	,, 267 12
8 ,,	24 ,,	,, 28 7	,, 271 13
9 ,,	23 ,,	,, 32 8	,, 275 14
10 ,,	22 ,,	,, 36 9	,, 279 15
11 ,,	21 ,,	,, 40 10	,, 283 16
12 ,,	20 ,,	,, 44 11	,, 287 17
13 ,,	19 ,,	,, 48 12	,, 292
14 ,,	18 ,,	,, 52 13	,, 296 1
15 ,,	17 ,,	,, 56 14	,, 300 2
16 ,,	16 ,,	,, 60 15	,, 304 3
17 ,,	15 ,,	,, 64 16	,, 308 4
18 ,,	14 ,,	,, 68 17	,, 312 5
19 ,,	13 ,,	,, 73	,, 316 6
20 ,,	12 ,,	,, 71 1	,, 320 7
21 ,,	11 ,,	,, 81 2	,, 324 8
22 ,,	10 ,,	,, 85 3	,, 328 9
23 ,,	9 ,,	,, 89 4	,, 332 10
24 ,,	8 ,,	,, 93 5	,, 336 11
25 ,,	7 ,,	,, 97 6	,, 340 12
26 ,,	6 ,,	,, 101 7	,, 344 13
27 ,,	5 ,,	,, 105 8	,, 348 14
28 ,,	4 ,,	,, 109 9	,, 352 15
29 ,,	3 ,,	,, 113 10	,, 356 16
30 ,,	2 ,,	,, 117 11	,, 360 17

When P. 1 Thoth falls	Rising originally at F. 1 Epiphi falls	Apparent Time for Rising is	True Time is normally
F. 1 Khoiak	P. 1 Pharmuthi	Cyc. Yr. $121\frac{12}{}$	Cyc. Yr. 365
2 ,,	30 Phamenoth	,, $125\frac{13}{}$	,, $369\frac{1}{}$
3 ,,	29 ,,	,, $129\frac{14}{}$	,, $373\frac{2}{}$
4 ,,	28 ,,	,, $133\frac{15}{}$	,, $377\frac{3}{}$
5 ,,	27 ,,	,, $137\frac{16}{}$	,, $381\frac{4}{}$
6 ,,	26 ,,	,, $141\frac{17}{}$	,, $385\frac{5}{}$
7 ,,	25 ,,	,, 146	,, $389\frac{6}{}$
8 ,,	24 ,,	,, $150\frac{1}{}$	,, $393\frac{7}{}$
9 ,,	23 ,,	,, $154\frac{2}{}$	,, $397\frac{8}{}$
10 ,,	22 ,,	,, $158\frac{3}{}$	,, $401\frac{9}{}$
11 ,,	21 ,,	,, $162\frac{4}{}$	,, $405\frac{10}{}$
12 ,,	20 ,,	,, $166\frac{5}{}$	,, $409\frac{11}{}$
13 ,,	19 ,,	,, $170\frac{6}{}$	,, $413\frac{12}{}$
14 ,,	18 ,,	,, $174\frac{7}{}$	,, $417\frac{13}{}$
15 ,,	17 ,,	,, $178\frac{8}{}$	,, $421\frac{14}{}$
16 ,,	16 ,,	,, $182\frac{9}{}$	,, $425\frac{15}{}$
17 ,,	15 ,,	,, $186\frac{10}{}$	,, $429\frac{16}{}$
18 ,,	14 ,,	,, $190\frac{11}{}$	,, $433\frac{17}{}$
19 ,,	13 ,,	,, $194\frac{12}{}$	,, 438
20 ,,	12 ,,	,, $198\frac{13}{}$	,, $442\frac{1}{}$
21 ,,	11 ,,	,, $202\frac{14}{}$	,, $446\frac{2}{}$
22 ,,	10 ,,	,, $206\frac{15}{}$	,, $450\frac{3}{}$
23 ,,	9 ,,	,, $210\frac{16}{}$	,, $454\frac{4}{}$
24 ,,	8 ,,	,, $214\frac{17}{}$	,, $458\frac{5}{}$
25 ,,	7 ,,	,, 219	,, $462\frac{6}{}$
26 ,,	6 ,,	,, $223\frac{1}{}$	,, $466\frac{7}{}$
27 ,,	5 ,,	,, $227\frac{2}{}$	,, $470\frac{8}{}$
28 ,,	4 ,,	,, $231\frac{3}{}$	,, $474\frac{9}{}$
29 ,,	3 ,,	,, $235\frac{4}{}$	,, $478\frac{10}{}$
30 ,,	2 ,,	,, $239\frac{5}{}$	$482\frac{11}{}$

When P. 1 Thoth falls	Rising originally at F. 1 Epiphi falls	Apparent Time for Rising is	True Time is normally
F. 1 Tybi	P. 1 Phamenoth	Cyc. Yr. $243\frac{1}{3}$	Cyc. Yr. $468\frac{5}{8}$
2 ,,	30 Mechir	,, $247\frac{7}{18}$	,, $490\frac{13}{18}$
3 ,,	29 ,,	,, $251\frac{8}{}$	,, $494\frac{14}{}$
4 ,,	28 ,,	,, $255\frac{9}{}$	,, $498\frac{15}{}$
5 ,,	27 ,,	,, $259\frac{10}{}$	,, $502\frac{16}{}$
6 ,,	26 ,,	,, $263\frac{11}{}$	,, $506\frac{17}{}$
7 ,,	25 ,,	,, $267\frac{12}{}$	,, 511
8 ,,	24 ,,	,, $271\frac{13}{}$	,, $515\frac{1}{}$
9 ,,	23 ,,	,, $275\frac{14}{}$	,, $519\frac{2}{}$
10 ,,	22 ,,	,, $279\frac{15}{}$	,, $523\frac{3}{}$
11 ,,	21 ,,	,, $283\frac{16}{}$	,, $527\frac{4}{}$
12 ,,	20 ,,	,, $287\frac{17}{}$	,, $531\frac{5}{}$
13 ,,	19 ,,	,, 292	,, $535\frac{6}{}$
14 ,,	18 ,,	,, $296\frac{1}{}$	,, $539\frac{7}{}$
15 ,,	17 ,,	,, $300\frac{2}{}$	,, $543\frac{8}{}$
16 ,,	16 ,,	,, $304\frac{3}{}$	,, $547\frac{9}{}$
17 ,,	15 ,,	,, $308\frac{4}{}$	,, $551\frac{10}{}$
18 ,,	14 ,,	,, $312\frac{5}{}$	,, $555\frac{11}{}$
19 ,,	13 ,,	,, $316\frac{6}{}$	,, $559\frac{12}{}$
20 ,,	12 ,,	,, $320\frac{7}{}$	,, $563\frac{13}{}$
21 ,,	11 ,,	,, $324\frac{8}{}$	,, $567\frac{14}{}$
22 ,,	10 ,,	,, $328\frac{9}{}$	,, $571\frac{15}{}$
23 ,,	9 ,,	,, $332\frac{10}{}$	,, $575\frac{16}{}$
24 ,,	8 ,,	,, $336\frac{11}{}$	,, $579\frac{17}{}$
25 ,,	7 ,,	,, $340\frac{12}{}$	,, 584
26 ,,	6 ,,	,, $344\frac{13}{}$	,, $588\frac{1}{}$
27 ,,	5 ,,	,, $348\frac{14}{}$	,, $592\frac{2}{}$
28 ,,	4 ,,	,, $352\frac{15}{}$	,, $596\frac{3}{}$
29 ,,	3 ,,	,, $356\frac{16}{}$	,, $600\frac{4}{}$
30 ,,	2 ,,	,, $360\frac{17}{}$	,, $604\frac{5}{}$

When P. 1 Thoth falls	Rising originally at F. 1 Epiphi falls	Apparent Time for Rising is	True Time is normally
F. 1 Mechir	P. 1 Mechir	Cyc. Yr. 365	Cyc. Yr. $608\frac{1}{18}$
2 ,,	30 Tybi	,, $369\frac{1}{18}$	,, $612\frac{7}{18}$
3 ,,	29 ,,	,, $373\frac{2}{18}$	,, $616\frac{8}{18}$
4 ,,	28 ,,	,, $377\frac{3}{18}$	,, $620\frac{9}{18}$
5 ,,	27 ,,	,, $381\frac{4}{18}$	,, $624\frac{10}{18}$
6 ,,	26 ,,	,, $385\frac{5}{18}$	,, $628\frac{11}{18}$
7 ,,	25 ,,	,, $387\frac{6}{18}$	,, $632\frac{12}{18}$
8 ,,	24 ,,	,, $393\frac{7}{18}$	,, $636\frac{13}{18}$
9 ,,	23 ,,	,, $397\frac{8}{18}$	,, $640\frac{14}{18}$
10 ,,	22 ,,	,, $401\frac{9}{18}$	,, $644\frac{15}{18}$
11 ,,	21 ,,	,, $405\frac{10}{18}$	,, $648\frac{16}{18}$
12 ,,	20 ,,	,, $409\frac{11}{18}$	,, $652\frac{17}{18}$
13 ,,	19 ,,	,, $413\frac{12}{18}$	,, 657
14 ,,	18 ,,	,, $417\frac{13}{18}$	,, $661\frac{1}{18}$
15 ,,	17 ,,	,, $421\frac{14}{18}$	,, $665\frac{2}{18}$
16 ,,	16 ,,	,, $425\frac{15}{18}$	,, $669\frac{3}{18}$
17 ,,	15 ,,	,, $427\frac{16}{18}$	,, $673\frac{4}{18}$
18 ,,	14 ,,	,, $433\frac{17}{18}$	,, $677\frac{5}{18}$
19 ,,	13 ,,	,, 438	,, $681\frac{6}{18}$
20 ,,	12 ,,	,, $442\frac{1}{18}$	,, $685\frac{7}{18}$
21 ,,	11 ,,	,, $446\frac{2}{18}$	,, $689\frac{8}{18}$
22 ,,	10 ,,	,, $450\frac{3}{18}$	,, $693\frac{9}{18}$
23 ,,	9 ,,	,, $454\frac{4}{18}$	,, $697\frac{10}{18}$
24 ,,	8 ,,	,, $458\frac{5}{18}$	,, $701\frac{11}{18}$
25 ,,	7 ,,	,, $462\frac{6}{18}$	,, $705\frac{12}{18}$
26 ,,	6 ,,	,, $466\frac{7}{18}$	,, $709\frac{13}{18}$
27 ,,	5 ,,	,, $470\frac{8}{18}$	,, $713\frac{14}{18}$
28 ,,	4 ,,	,, $474\frac{9}{18}$	,, $717\frac{15}{18}$
29 ,,	3 ,,	,, $478\frac{10}{18}$	,, $721\frac{16}{18}$
30 ,,	2 ,,	,, $482\frac{11}{18}$	,, $725\frac{17}{18}$

When P. 1 Thoth falls	Rising originally at F. 1 Epiphi falls	Apparent Time for Rising is	True Time is normally
1 Phamenoth	P. 1 Tybi	Cyc. Yr. $486\frac{2}{3}$	Cyc. Yr. 730
2 ,,	30 Khoiak	,, $490\frac{3}{18}$	,, $734\frac{1}{}$
3 ,,	29 ,,	,, $494\frac{14}{}$	,, $738\frac{2}{}$
4 ,,	28 ,,	,, $498\frac{15}{}$	,, $742\frac{3}{}$
5 ,,	27 ,,	,, $502\frac{16}{}$	,, $746\frac{4}{}$
6 ,,	26 ,,	,, $506\frac{17}{}$	,, $750\frac{5}{}$
7 ,,	25 ,,	,, 511	,, $754\frac{6}{}$
8 ,,	24 ,,	,, $515\frac{1}{}$	,, $758\frac{7}{}$
9 ,,	23 ,,	,, $519\frac{2}{}$	,, $762\frac{8}{}$
10 ,,	22 ,,	,, $523\frac{3}{}$	,, $766\frac{9}{}$
11 ,,	21 ,,	,, $527\frac{4}{}$	,, $770\frac{10}{}$
12 ,,	20 ,,	,, $531\frac{5}{}$	,, $774\frac{11}{}$
13 ,,	19 ,,	,, $535\frac{6}{}$	,, $778\frac{12}{}$
14 ,,	18 ,,	,, $539\frac{7}{}$	,, $782\frac{13}{}$
15 ,,	17 ,,	,, $543\frac{8}{}$	,, $786\frac{14}{}$
16 ,,	16 ,,	,, $547\frac{9}{}$	,, $790\frac{15}{}$
17 ,,	15 ,,	,, $551\frac{10}{}$	,, $794\frac{16}{}$
18 ,,	14 ,,	,, $555\frac{11}{}$	,, $798\frac{17}{}$
19 ,,	13 ,,	,, $559\frac{12}{}$	,, 803
20 ,,	12 ,,	,, $563\frac{13}{}$	,, $807\frac{1}{}$
21 ,,	11 ,,	,, $567\frac{14}{}$	,, $811\frac{2}{}$
22 ,,	10 ,,	,, $571\frac{15}{}$	,, $815\frac{3}{}$
23 ,,	9 ,,	,, $575\frac{16}{}$	,, $819\frac{4}{}$
24 ,,	8 ,,	,, $579\frac{17}{}$	,, $823\frac{5}{}$
25 ,,	7 ,,	,, 584	,, $827\frac{6}{}$
26 ,,	6 ,,	,, $588\frac{1}{}$	,, $831\frac{7}{}$
27 ,,	5 ,,	,, $592\frac{2}{}$	,, $835\frac{8}{}$
28 ,,	4 ,,	,, $596\frac{3}{}$	,, $839\frac{9}{}$
29 ,,	3 ,,	,, $600\frac{4}{}$	,, $843\frac{10}{}$
30 ,,	2 ,,	,, $604\frac{5}{}$	,, $847\frac{11}{}$

When P. 1 Thoth falls	Rising originally at F. 1 Epiphi falls	Apparent Time for Rising is	True Time is normally
F. 1 Pharmuthi	P. 1 Khoiak	Cyc. Yr. $608\frac{1}{3}$	Cyc. Yr. $851\frac{2}{3}$
2 ,,	30 Athyr	,, $612\frac{7}{18}$	,, $855\frac{3}{8}$
3 ,,	29 ,,	,, $616\frac{8}{9}$	,, $859\frac{14}{15}$
4 ,,	28 ,,	,, $620\frac{9}{10}$	,, $863\frac{15}{16}$
5 ,,	27 ,,	,, $624\frac{10}{11}$	,, $867\frac{16}{17}$
6 ,,	26 ,,	,, $628\frac{11}{12}$	,, $871\frac{17}{18}$
7 ,,	25 ,,	,, $632\frac{12}{13}$	,, 876
8 ,,	24 ,,	,, $636\frac{13}{14}$	,, $880\frac{1}{2}$
9 ,,	23 ,,	,, $640\frac{14}{15}$	,, $884\frac{2}{3}$
10 ,,	22 ,,	,, $644\frac{15}{16}$	,, $888\frac{3}{4}$
11 ,,	21 ,,	,, $648\frac{16}{17}$	,, $892\frac{4}{5}$
12 ,,	20 ,,	,, $652\frac{17}{18}$	,, $896\frac{5}{6}$
13 ,,	19 ,,	,, 657	,, $900\frac{6}{7}$
14 ,,	18 ,,	,, $661\frac{1}{2}$	,, $904\frac{7}{8}$
15 ,,	17 ,,	,, $665\frac{2}{3}$	,, $908\frac{8}{9}$
16 ,,	16 ,,	,, $669\frac{3}{4}$	,, $912\frac{9}{10}$
17 ,,	15 ,,	,, $673\frac{4}{5}$	,, $916\frac{10}{11}$
18 ,,	14 ,,	,, $677\frac{5}{6}$	,, $920\frac{11}{12}$
19 ,,	13 ,,	,, $681\frac{6}{7}$	,, $924\frac{12}{13}$
20 ,,	12 ,,	,, $685\frac{7}{8}$	,, $928\frac{13}{14}$
21 ,,	11 ,,	,, $689\frac{8}{9}$	,, $932\frac{14}{15}$
22 ,,	10 ,,	,, $693\frac{9}{10}$	,, $936\frac{15}{16}$
23 ,,	9 ,,	,, $697\frac{10}{11}$	,, $940\frac{16}{17}$
24 ,,	8 ,,	,, $701\frac{11}{12}$	,, $944\frac{17}{18}$
25 ,,	7 ,,	,, $705\frac{12}{13}$	,, 949
26 ,,	6 ,,	,, $709\frac{13}{14}$	,, $953\frac{1}{2}$
27 ,,	5 ,,	,, $713\frac{14}{15}$	,, $957\frac{2}{3}$
28 ,,	4 ,,	,, $717\frac{15}{16}$	,, $961\frac{3}{4}$
29 ,,	3 ,,	,, $721\frac{16}{17}$	,, $965\frac{4}{5}$
30 ,,	2 ,,	,, $725\frac{17}{18}$	,, $969\frac{5}{6}$

When P. 1 Thoth falls	Rising originally at F. 1 Epiphi falls	Apparent Time for Rising is	True Time is normally
F. 1 Pakhons	P. 1 Athyr	Cyc. Yr. 730	Cyc. Yr. $973\frac{1}{3}$
2 ,,	30 Paopi	,, $734\frac{1}{4}$	,, $977\frac{7}{16}$
3 ,,	29 ,,	,, $738\frac{2}{4}$	,, $981\frac{8}{16}$
4 ,,	28 ,,	,, $742\frac{3}{4}$	,, $985\frac{9}{16}$
5 ,,	27 ,,	,, $746\frac{4}{4}$	,, $989\frac{10}{16}$
6 ,,	26 ,,	,, $750\frac{5}{4}$	,, $993\frac{11}{16}$
7 ,,	25 ,,	,, $754\frac{6}{4}$	,, $997\frac{12}{16}$
8 ,,	24 ,,	,, $758\frac{7}{4}$	,, $1001\frac{13}{16}$
9 ,,	23 ,,	,, $762\frac{8}{4}$	,, $1005\frac{14}{16}$
10 ,,	22 ,,	,, $766\frac{9}{4}$	,, $1009\frac{15}{16}$
11 ,,	21 ,,	,, $770\frac{10}{4}$	,, $1013\frac{16}{16}$
12 ,,	20 ,,	,, $774\frac{11}{4}$	,, $1017\frac{17}{16}$
13 ,,	19 ,,	,, $778\frac{12}{4}$	,, 1022
14 ,,	18 ,,	,, $782\frac{13}{4}$	,, $1026\frac{1}{4}$
15 ,,	17 ,,	,, $786\frac{14}{4}$	,, $1030\frac{2}{4}$
16 ,,	16 ,,	,, $790\frac{15}{4}$	,, $1034\frac{3}{4}$
17 ,,	15 ,,	,, $794\frac{16}{4}$	,, $1038\frac{4}{4}$
18 ,,	14 ,,	,, $798\frac{17}{4}$	,, $1042\frac{5}{4}$
19 ,,	13 ,,	,, 803	,, $1046\frac{6}{4}$
20 ,,	12 ,,	,, $807\frac{1}{4}$	,, $1050\frac{7}{4}$
21 ,,	11 ,,	,, $811\frac{2}{4}$	,, $1054\frac{8}{4}$
22 ,,	10 ,,	,, $815\frac{3}{4}$	,, $1058\frac{9}{4}$
23 ,,	9 ,,	,, $819\frac{4}{4}$	,, $1062\frac{10}{4}$
24 ,,	8 ,,	,, $823\frac{5}{4}$	,, $1066\frac{11}{4}$
25 ,,	7 ,,	,, $827\frac{6}{4}$	,, $1070\frac{12}{4}$
26 ,,	6 ,,	,, $831\frac{7}{4}$	,, $1074\frac{13}{4}$
27 ,,	5 ,,	,, $835\frac{8}{4}$	,, $1078\frac{14}{4}$
28 ,,	4 ,,	,, $839\frac{9}{4}$	,, $1082\frac{15}{4}$
29 ,,	3 ,,	,, $843\frac{10}{4}$	,, $1086\frac{16}{4}$
30 ,,	2 ,,	,, $847\frac{11}{4}$	,, $1090\frac{17}{4}$

When P. 1 Thoth falls	Rising originally at F. 1 Epiphi falls	Apparent Time for Rising is	True Time is normally
F. 1 Paoni	P. 1 Paopi	Cyc. Yr. $851\frac{2}{5}$	Cyc. Yr. 1095
2 ,,	30 Thoth	,, $855\frac{13}{18}$	,, $1099\frac{1}{18}$
3 ,,	29 ,,	,, $859\frac{14}{}$	,, $1103\frac{2}{}$
4 ,,	28 ,,	,, $863\frac{15}{}$	,, $1107\frac{3}{}$
5 ,,	27 ,,	,, $867\frac{16}{}$	,, $1111\frac{4}{}$
6 ,,	26 ,,	,, $871\frac{17}{}$	,, $1115\frac{5}{}$
7 ,,	25 ,,	,, 876	,, $1119\frac{6}{}$
8 ,,	24 ,,	,, $880\frac{1}{}$	,, $1123\frac{7}{}$
9 ,,	23 ,,	,, $884\frac{2}{}$	,, $1127\frac{8}{}$
10 ,,	22 ,,	,, $888\frac{3}{}$	,, $1131\frac{9}{}$
11 ,,	21 ,,	,, $892\frac{4}{}$	,, $1135\frac{10}{}$
12 ,,	20 ,,	,, $896\frac{5}{}$	,, $1139\frac{11}{}$
13 ,,	19 ,,	,, $900\frac{6}{}$	,, $1143\frac{12}{}$
14 ,,	18 ,,	,, $904\frac{7}{}$	,, $1147\frac{13}{}$
15 ,,	17 ,,	,, $908\frac{8}{}$	,, $1151\frac{14}{}$
16 ,,	16 ,,	,, $912\frac{9}{}$	,, $1155\frac{15}{}$
17 ,,	15 ,,	,, $916\frac{10}{}$	,, $1159\frac{16}{}$
18 ,,	14 ,,	,, $920\frac{11}{}$	,, $1163\frac{17}{}$
19 ,,	13 ,,	,, $924\frac{12}{}$	,, 1168
20 ,,	12 ,,	,, $928\frac{13}{}$	,, $1172\frac{1}{}$
21 ,,	11 ,,	,, $932\frac{14}{}$	,, $1176\frac{2}{}$
22 ,,	10 ,,	,, $936\frac{15}{}$	,, $1180\frac{3}{}$
23 ,,	9 ,,	,, $940\frac{16}{}$	,, $1184\frac{4}{}$
24 ,,	8 ,,	,, $944\frac{17}{}$	,, $1188\frac{5}{}$
25 ,,	7 ,,	,, 949	,, $1192\frac{6}{}$
26 ,,	6 ,,	,, $953\frac{1}{}$	,, $1196\frac{7}{}$
27 ,,	5 ,,	,, $957\frac{2}{}$	,, $1200\frac{8}{}$
28 ,,	4 ,,	,, $961\frac{3}{}$	,, $1204\frac{9}{}$
29 ,,	3 ,,	,, $965\frac{4}{}$	,, $1208\frac{10}{}$
30 ,,	2 ,,	,, $969\frac{5}{}$	,, $1212\frac{11}{}$

When P. 1 Thoth falls	Rising originally at F. 1 Epiphi falls	Apparent Time for Rising is	True Time is normally
F. 1 Epiphi	P. 1 Thoth	Cyc. Yr. $973\frac{1}{3}$	Cyc. Yr. $1216\frac{2}{3}$
2 ,,	30 Mesorē	,, $977\frac{7}{18}$	,, $1220\frac{13}{18}$
3 ,,	29 ,,	,, $981\frac{8}{}$	,, $1224\frac{14}{}$
4 ,,	28 ,,	,, $985\frac{9}{}$	,, $1228\frac{15}{}$
5 ,,	27 ,,	,, $989\frac{10}{}$	,, $1232\frac{16}{}$
6 ,,	26 ,,	,, $993\frac{11}{}$	,, $1236\frac{17}{}$
7 ,,	25 ,,	,, $999\frac{12}{}$	,, 1241
8 ,,	24 ,,	,, $1001\frac{13}{}$	,, $1245\frac{1}{}$
9 ,,	23 ,,	,, $1005\frac{14}{}$	,, $1249\frac{2}{}$
10 ,,	22 ,,	,, $1009\frac{15}{}$	,, $1253\frac{3}{}$
11 ,,	21 ,,	,, $1013\frac{16}{}$	,, $1257\frac{4}{}$
12 ,,	20 ,,	,, $1017\frac{17}{}$	,, $1261\frac{5}{}$
13 ,,	19 ,,	,, 1022	,, $1265\frac{6}{}$
14 ,,	18 ,,	,, $1026\frac{1}{}$	,, $1269\frac{7}{}$
15 ,,	17 ,,	,, $1030\frac{2}{}$	,, $1273\frac{8}{}$
16 ,,	16 ,,	,, $1034\frac{3}{}$	,, $1279\frac{9}{}$
17 ,,	15 ,,	,, $1038\frac{4}{}$	,, $1281\frac{10}{}$
18 ,,	14 ,,	,, $1042\frac{5}{}$	,, $1285\frac{11}{}$
19 ,,	13 ,,	,, $1046\frac{6}{}$	,, $1289\frac{12}{}$
20 ,,	12 ,,	,, $1050\frac{7}{}$	,, $1293\frac{13}{}$
21 ,,	11 ,,	,, $1054\frac{8}{}$	,, $1297\frac{14}{}$
22 ,,	10 ,,	,, $1058\frac{9}{}$	,, $1301\frac{15}{}$
23 ,,	9 ,,	,, $1062\frac{10}{}$	,, $1305\frac{16}{}$
24 ,,	8 ,,	,, $1066\frac{11}{}$	,, $1309\frac{17}{}$
25 ,,	7 ,,	,, $1070\frac{12}{}$	,, 1314
26 ,,	6 ,,	,, $1074\frac{13}{}$	,, $1318\frac{1}{}$
27 ,,	5 ,,	,, $1078\frac{14}{}$	,, $1322\frac{2}{}$
28 ,,	4 ,,	,, $1082\frac{15}{}$	,, $1326\frac{3}{}$
29 ,,	3 ,,	,, $1086\frac{16}{}$	,, $1330\frac{4}{}$
30 ,,	2 ,,	,, $1090\frac{17}{}$	,, $1334\frac{5}{}$

When P. 1 Thoth falls	Rising originally at F. 1 Epiphi falls	Apparent Time for Rising is	True Time is normally
F. 1 Mesorē	P. 1 Mesorē	Cyc. Yr. 1095	Cyc. Yr. 1338$\frac{1}{18}$
2 ,,	30 Epiphi	,, 1099$\frac{1}{18}$	,, 1342$\frac{7}{18}$
3 ,,	29 ,,	,, 1103$\frac{2}{18}$	,, 1346$\frac{8}{18}$
4 ,,	28 ,,	,, 1107$\frac{3}{18}$	,, 1350$\frac{9}{18}$
5 ,,	27 ,,	,, 1111$\frac{4}{18}$	,, 1354$\frac{10}{18}$
6 ,,	26 ,,	,, 1115$\frac{5}{18}$	,, 1358$\frac{11}{18}$
7 ,,	25 ,,	,, 1119$\frac{6}{18}$	,, 1362$\frac{12}{18}$
8 ,,	24 ,,	,, 1123$\frac{7}{18}$	,, 1366$\frac{13}{18}$
9 ,,	23 ,,	,, 1127$\frac{8}{18}$	,, 1370$\frac{14}{18}$
10 ,,	22 ,,	,, 1131$\frac{9}{18}$	,, 1374$\frac{15}{18}$
11 ,,	21 ,,	,, 1135$\frac{10}{18}$	,, 1378$\frac{16}{18}$
12 ,,	20 ,,	,, 1139$\frac{11}{18}$	,, 1382$\frac{17}{18}$
13 ,,	19 ,,	,, 1143$\frac{12}{18}$	,, 1387
14 ,,	18 ,,	,, 1147$\frac{13}{18}$	,, 1391$\frac{1}{18}$
15 ,,	17 ,,	,, 1151$\frac{14}{18}$	,, 1395$\frac{2}{18}$
16 ,,	16 ,,	,, 1155$\frac{15}{18}$	,, 1399$\frac{3}{18}$
17 ,,	15 ,,	,, 1159$\frac{16}{18}$	,, 1403$\frac{4}{18}$
18 ,,	14 ,,	,, 1163$\frac{17}{18}$	,, 1407$\frac{5}{18}$
19 ,,	13 ,,	,, 1168	,, 1411$\frac{6}{18}$
20 ,,	12 ,,	,, 1172$\frac{1}{18}$	,, 1415$\frac{7}{18}$
21 ,,	11 ,,	,, 1176$\frac{2}{18}$	,, 1419$\frac{8}{18}$
22 ,,	10 ,,	,, 1180$\frac{3}{18}$	,, 1423$\frac{9}{18}$
23 ,,	9 ,,	,, 1184$\frac{4}{18}$	,, 1427$\frac{10}{18}$
24 ,,	8 ,,	,, 1188$\frac{5}{18}$	,, 1431$\frac{11}{18}$
25 ,,	7 ,,	,, 1192$\frac{6}{18}$	,, 1435$\frac{12}{18}$
26 ,,	6 ,,	,, 1196$\frac{7}{18}$	,, 1439$\frac{13}{18}$
27 ,,	5 ,,	,, 1200$\frac{8}{18}$	,, 1443$\frac{14}{18}$
28 ,,	4 ,,	,, 1204$\frac{9}{18}$	,, 1447$\frac{15}{18}$
29 ,,	3 ,,	,, 1208$\frac{10}{18}$	,, 1451$\frac{16}{18}$
30 ,,	2 ,,	,, 1212$\frac{11}{18}$	,, 1455$\frac{17}{18}$

TABLE IV

SHOWING how, during every SOTHIC CYCLE, the SEASONS according to the PROGRESSIVE CLOCK gradually diverge from and then gradually once more coincide with the NATURAL SEASONS as normally indicated by the FIXED CLOCK.

We have seen that the Progressive Clock loses a little more than 1 Year in every Sothic Cycle of 1470 Years. That is to say, at the end of every period, originally commencing from A.M. 0–1, the P. Clock is $370\frac{5}{72}$ days, or about 12 months, short of Natural Time as normally indicated on the Fixed Clock. Thus, from the commencement of the Cycle onwards, as indicated by the 2 Clocks, the Seasons, originally coincident, *steadily diverge* —each remove leaving the P. Clock Seasons behind Nature by just double the time by which the Cycle is in fact short of Natural Time, because, of course, the latter is also advancing. Inasmuch, however, as the Seasons in fact coincide again at the end of each Cycle, it is obvious that it is only during the first half of the Cycle, *i.e.* during its first 2 Great Panegyrical Years, that the Clock Seasons are cumulatively divergent. At Cyc. Div. 730 (half-way round), the Seasons, as indicated by the 2 Clocks, are

exactly reversed. For instance, if the FIXED CLOCK shows *Thoth* (our September–October), the P. CLOCK will show *Phamenoth* (normally our March–April). But, from that point on, throughout the second half of the CYCLE, *i.e.* throughout the 3rd and 4th GREAT PANEGYRICAL YEARS, while the SEASONS by the P. CLOCK still continue to be cumulatively short of NATURAL TIME, up to the maximum of $370\frac{5}{72}$ days, they nevertheless steadily become *less and less divergent* as they approach nearer and nearer again to *Zero*, the point of Coincidence.

Thus, at the following periods, regarded as completed—

A.M.		
0	when NATURE is say, 23 Sept., P. CLOCK TIME is	23 Sept., *i.e.*, the two CLOCKS coincide.

Distributing the shortage, it is clear that at the end of the period A.M. $0–121\frac{2}{3}$, P. CLOCK TIME has fallen short of F. CLOCK TIME at

the rate of $1\frac{1}{72}$ day in every $4\frac{1}{18}$ Cyclical Years and, as regards SEASONS, has fallen behind at the rate of $2\frac{1}{36}$ days in every $4\frac{1}{18}$ Cyclical Years. To resume: at the following completed periods—in Col. 1, as stated; in Col. 2, for the excess over 1460; and in Col. 3, for the excess over 1460 + 1460 = 2920—

A.M.		
$121\frac{2}{3}$, $1581\frac{2}{3}$, or $3041\frac{2}{3}$	when Nature is, say, 23 Sept., P. CLOCK TIME is	23 Jul. = roughly 1 month short, but 2 m. behind, because NATURE has advanced 1 m.
$243\frac{1}{3}$, $1703\frac{1}{3}$, or $3163\frac{1}{3}$	,,	23 May = 2 m. short, but 4 m. behind.
365, 1825, or 3285	,,	23 Mar. = 3 m. short, but 6 m. behind.
$486\frac{2}{3}$, $1946\frac{2}{3}$, or $3496\frac{2}{3}$	,,	23 Jan. = 4 m. short, but 8 m. behind.
$608\frac{1}{3}$, $2068\frac{1}{3}$, or $3528\frac{1}{3}$	,,	23 Nov. = 5 m. short, but 10 m. behind.

A.M.		
730, 2190, or 3650	when Nature is, say, 23 Sept., P. CLOCK TIME is	23 Sept. = 6 m. short, but 12 m. behind, and SEASONS REVERSED.
$851\frac{2}{3}$, $2311\frac{2}{3}$, or $3771\frac{2}{3}$	,,	23 Jul. = 7 m. short, but 10 m. behind. and SEASONS beginning to CONVERGE again.
$973\frac{1}{3}$, $2433\frac{1}{3}$, or $3893\frac{1}{3}$	,,	23 May = 8 m. short, but 8 m. behind.
1095, 2555, or 4015 = A.D. 16	,,	23 Mar. = 9 m. short, but 6 m. behind.
$1216\frac{2}{3}$, $2676\frac{2}{3}$, or $4136\frac{2}{3}$ = A.D. $137\frac{2}{3}$	,,	23 Jan. = 10 m. short, but 4 m. behind.
$1338\frac{1}{3}$, $2798\frac{1}{3}$, or $4258\frac{1}{3}$ = A.D. $259\frac{1}{3}$	,,	23 Nov. = 11 m. short, but 2 m. behind.
1460, 2920, or 4360 = A.D. 381	,,	23 Sept. = 12 m. or $370\frac{5}{72}$ days short, but SEASONS again COINCIDING.

N.B.—Now let us take the RISING in Senwosri III's 7th regnal year, A.M. $1771\frac{2}{5}$ = B.C. $2224\frac{7}{9}$, as a test case.

When the Seasons coincide at the Autumnal Equinox, SIRIUS rises on F. 1 Epiphi = say, 20th July—10 months after F. and P. 1 Thoth. A.M. $1771\frac{2}{5}$ is $1460+311\frac{2}{5}$ of the 2nd Cycle. At Cyc. Div. $243\frac{1}{3}$, P. CLOCK TIME is roughly 2 months *short* of NATURAL TIME, and, as regards the SEASONS, it is 4 months *behind*. Therefore, at Cyc. Div. $311\frac{2}{5}$, which in the 2nd Cycle = A.M. $1771\frac{2}{5}$, we get the following :—

Rising.	Official date.	True Time.	Clock Time.	Clock Seasons.
$1771\frac{2}{5}$ = 7 months 12/13 days after P. 1 Thoth.	15 Pharmūthi = 5 months 2 days behind TRUE TIME.	17/18th Athyr.	14 Pharmūthi = 2 months $16\frac{1}{2}$ days short of NATURAL TIME. Also $2\frac{1}{2}$ months short of F. 1 Epiphi.	5 months 3 days behind NATURAL TIME.

All which seems to show that at that epoch the OFFICIAL REPORTS went by the CLOCK SEASONS, and that at that time there was really no coincidence; or, if there was, it was only between CLOCK TIME and OFFICIAL TIME. In other words, the OFFICIAL DATE was CALENDAR TIME, not TRUE TIME. But, by the time of Amenhotep I (A.M. 2470 =B.C. 1526), some change of method appears to have taken place, because on that occasion the OFFICIAL DATE is only 1 month 28 days behind TRUE TIME, whereas it should have been 8 months and some odd days behind. Strange to say, it is 8 months 11 days after Clock Time (22 Paophi); which looks as if Official Reports were then trying to represent Natural Time, not Calendar Time.

As a matter of fact—and this is practically my final winding up of the tangled skein that we have been seeking to unravel—what really happened seems to have been this. On the founding of the 18th DYNASTY by AAHMĒS,

circ. A.M. 2439=B.C. 1557, the CALENDAR WAS REVOLUTIONISED. The Old System—which, I believe, must have corresponded to mine, was for some unknown reason discarded, the Year was taken as *commencing from F. 1 Epiphi*, and P. 1 Thoth (the Indicator) was deliberately put back and set to that point. They knew where they were *on the* CYCLE from the relation between this new artificial point and TRUE TIME as indicated by the Old System. Clock Time by that System was then P. 30 Paophi: True Time was therefore F. 2 Pakhons: the interval between it and F. 1 Epiphi was 1 month 28 days. This they knew, as appears from the fact that thenceforth all their dates preserve that, or about that, relationship to True Time. In due course, as P. 1 Thoth travelled on, by stages of $4\frac{1}{8}$ Cyc. Divisions to a day, or as they seem to have taken it by 4 years to a day, it reached F. 7, or a doubtful F. 9 Epiphi, in the 7th, or a doubtful 9th, regnal year of

Amenhotep I: and so it went on—through 14, 21, 28 Epiphi, 7, 14, 21, 28 Mesorē, 7, 14, 22 (21 ?), 29 (28 ?) Thoth, and 1 Tybi, as reported—always keeping up the same average interval between the dates, so indicated, and True Time as indicated by the Old System.

It was quite a wrong System, of course; because the interval between True Time and F. 1 Epiphi *never* remained constant.

One last word. I cannot for the life of me imagine how Professor Breasted has deluded himself with the idea that his shift of 225 days from New Year's Day *at F. 1 Epiphi*, in what he calls B.C. 1880, being the 7th regnal year of Senwosri III, consists with his shift of 308 days in the 9th year of Amenhotep I, B.C. 1549, or his shift of 327 days "somewhere between 47 and 101 years later" in the reign of Thothmēs III—by which, I presume, he means the Rising on 28 Epiphi in that king's 33rd year=B.C. 1469 according to the Professor's chronology. From B.C. 1880 to B.C.

1549 is 331 years=nearly 83 days on the basis he adopts of 4 years to a day: and the difference between 225 and 308=also 83 days. This is quite all right, so far. Further, from B.C. 1549 to B.C. 1469 is 80 years=20 days. This, too, seems quite all right, as representing the interval between 308 and 327. But, *how does Professor Breasted get his* 308 *days' shift for 9th Epiphi?* It is, of course, 83 days from the 225 days' shift in B.C. 1808. But did he arrive at it independently of that fact? If so, what was his method, and was it legitimate? He certainly did not arrive at it in the same way as that by which he reckoned his 225 days for the Senwosri III Rising. In that case he treated *F.* 1 *Epiphi* as New Year's Day, and began counting from there. Does he do that in this case? No: had he done so he would never have got his 308. What, then, has he done? He has simply discarded his F. 1 Epiphi, and has gone to *F.* 1 *Thoth.* This 308 days=10 months 8 days. *It is only*

by starting from F. 1 *Thoth that in* 10 *months* 8 *days you will come out at* 9 *Epiphi.* Had Breasted in this case started from F. 1 Epiphi, as he did in the case of the Rising in Senwosri III's time, his 308 days would have brought him out at 9th Pakhons instead of 9th Epiphi! Similarly, to get 28th Epiphi for the Rising in Thothmēs III's 33rd year, the Professor had again to resort to F. 1 Thoth as his starting point. This, at any rate, is certain: *both* his methods cannot be correct. Surely he will let us know which one he elects to stand by?

Let us even suppose that Professor Breasted's answer is: "Oh no, even in the case of the Senwosri Rising I begin to count my 225 days from F. 1 Thoth, and that brings me to 15 Pharmuthi." That would not be consistent with what he says in *Anc. Rec.*, vol. i, p. 31; note *a*, read with the opening sentences of § 40, p. 26, from which I gather that for him New Year's Day and the "beginning" and

"the first day of the calendar year"=F. 1 Epiphi pointed to by P. 1 Thoth. I do *not* gather from it that they=F. 1 Thoth pointed to by P. 1 Thoth. However, take it that he counts from F. 1 Thoth for the Senwosri Rising. How does that give him his year B.C. 1880? I mean on the Clock, and apart from his subtraction of 900 from B.C. 2780? Counting 225 from F. 1 Epiphi he arrives at 15 Mechir. That is $60\frac{3}{6}$ past Cyc. Div. $608\frac{2}{3}$ $=669\frac{1}{2}$, which, plus 1460 for the previous 1st Cycle, gives him A.M. $2129\frac{1}{2}$=B.C. $1866\frac{1}{2}$. This is near enough to his B.C. 1880 to be satisfactory, assuming that this particular method is a sound one. But now let him count his 225 from F. 1 Thoth, thus bringing him to 15 Pharmuthi. That is $60\frac{5}{6}$ past Cyc. Div. $851\frac{2}{3}$=$912\frac{1}{2}$, which, plus 1460, gives him A.M. $2373\frac{1}{2}$=B.C. $1623\frac{1}{2}$. I imagine that that is very far from being a satisfactory year from his point of view! I take it, therefore, that I am right in my original assumption that for

the Senwosri Rising Professor Breasted counts his 225 days' shift from F. 1 Epiphi, seeing that that brings him somewhere near his year B.C. 1880.

The following TABULAR STATEMENT is useful :—

Cyc. Div.	Interval between P. 1 Thoth and Rising.	Calendar Seasons as regards Natural Time.
$121\frac{2}{3}$	10 months	2 months behind : 1 m. short
$243\frac{1}{3}$	9 ,,	4 ,, 2 ,,
365	8 ,,	6 ,, 3 ,,
$486\frac{2}{3}$	7 ,,	8 ,, 4 ,,
$608\frac{1}{3}$	6 ,,	10 ,, 5 ,,
730	5 ,,	12 ,, 6 ,,
$851\frac{2}{3}$	4 ,,	10 ,, 7 ,,
$973\frac{1}{3}$	3 ,,	8 ,, 8 ,,
1095	2 ,,	6 ,, 9 ,,
$1216\frac{2}{3}$	1 ,,	4 ,, 10 ,,
$1338\frac{1}{3}$	. ,,	2 ,, 11 ,,
1460	10 ,,	Coinciding : 12 ,,

N.B.—Every $4\frac{1}{8}$ years = 1 day short.
Every $4\frac{1}{8}$ years = 2 days behind, as regards Seasons, at least up to Cyc. Div. 730.

ADDENDUM

We have seen from the Clock of the Progressive Year that Sothis, or Sirius, is due to rise periodically at certain dates separated by intervals of $4\frac{1}{4}$ Cyclical Divisions, or Years; but we have also seen that, according to the data in *Petrie*, vol. ii, p. 32, a series of particularly specified Risings occurred as a matter of fact, or at least as a matter of Official Report, on quite other dates—with regard to some of which we have, however, reason to entertain doubts as to their accuracy.*

Let us therefore make a List of the due dates, according to the Clock, of all the Risings that have occurred throughout the Period we have been dealing with, marking with a star the Risings that we are specially interested in, and also a List of the dates on which these last-mentioned Risings are officially reported to have actually taken place, and compare the two.

Perhaps, from the comparison, we shall be able to extract something which may shed some light on

* On reconsideration I am not so sure of this, but I let my previous train of thought stand.

the fact that the mutual relations subsisting between NATURAL TIME on the one hand and the PROGRESSIVE and FIXED CLOCKS on the other are continually changing in the way that I found so disturbing in connection with my original calculations.

A definite base from which to start will, of course, be necessary. For this I propose to resort to the first occasion since A.M. 0 on which SOTHIS rose (as it does only once in each Cycle) on Progressive 1 Thoth, or Progressive New Year's Day. This was at those Cyclical Points, or Divisions ($1216\frac{2}{3}$–$1217\frac{1}{2}$; $1217\frac{1}{2}$–$1218\frac{1}{2}$; $1218\frac{1}{2}$–$1219\frac{1}{2}$; $1219\frac{1}{2}$–$1220\frac{2}{3}$) during the 4 years represented by which P. 1 Thoth fell on Fixed 1 Epiphi, 29 days by the Annual Clock after P. 30 Thoth had fallen on the same date. Cyc. Div. $1216\frac{2}{3}$, of course, is not one of these 4 years. Like *Zero*, it is only a nominal point from which to start. The year that is said to begin there is really the durational space between it and $1217\frac{1}{2}$; and so on, throughout the series.

Hence, according to the PROGRESSIVE CLOCK, the SOTHIC RISINGS, beginning from Cyc. Div. $1216\frac{2}{3}$, occurred as follows:—

	$1216\frac{2}{3}$	= Starting point, or *Zero*.
P. 30–1 Mesorē	$121\frac{2}{3}$	= 30 series of 4 years, ending $1338\frac{1}{3}$.
	$1338\frac{1}{3}$	= Starting point for next series.
„ Epiphi	$121\frac{2}{3}$	
	1460	

P. 30–1	Paoni	$121\frac{2}{18}$
		$1581\frac{2}{18}$
,,	Pakhons	$121\frac{2}{18}$
		$1703\frac{4}{18}$

It now becomes necessary to take the month day by day, and the Cycle at intervals of $4\frac{1}{18}$ Divs.

30	Pharmuthi	$4\frac{1}{18}$
		$1707\frac{7}{18}$
29	,,	$4\frac{1}{18}$
		$1711\frac{8}{18}$
28	,,	$4\frac{1}{18}$
		$1715\frac{9}{18}$
27	,,	$4\frac{1}{18}$
		$1719\frac{0}{18}$
26	,,	$4\frac{1}{18}$
		$1723\frac{1}{18}$
25	,,	$4\frac{1}{18}$
		$1727\frac{2}{18}$
24	,,	$4\frac{1}{18}$
		$1731\frac{3}{18}$
23	,,	$4\frac{1}{18}$
		$1735\frac{4}{18}$
22	,,	$4\frac{1}{18}$
		$1739\frac{5}{18}$
21	,,	$4\frac{1}{18}$
		$1743\frac{6}{18}$

20	Pharmuthi	$4\frac{1}{18}$	
		$1747\frac{7}{18}$	
19	,,	$4\frac{1}{18}$	
		1752	
18	,,	$4\frac{1}{18}$	
		$1756\frac{1}{18}$	
17	,,	$4\frac{1}{18}$	
		$1760\frac{2}{18}$	
16	,,	$4\frac{1}{18}$	
		$1764\frac{3}{18}$	
15	,,	$4\frac{1}{18}$	
		$1768\frac{4}{18}$	
*14	,,	$4\frac{1}{18}$	= series of 4 completed years —$1769\frac{7}{72}$, $1770\frac{8}{72}$, $1771\frac{9}{72}$, and $1772\frac{70}{72}$.
		$1772\frac{5}{18}$	

N.B.—The RISING in A.M. $1771\frac{9}{72}$ (7th regnal year of Senwosri III) is reported officially as having occurred on the 15th day of the 8th month =15th Pharmuthi. As NATURAL TIME and the CLOCK then coincided, this is no doubt intended to be a normal case: yet the official report is 1 day in advance of the Clock. Probably the

exact point of coincidence had not quite been reached.

1	Pharmuthi	$52\frac{3}{18}$
		1825
P. 30–1	Phamenoth	$121\frac{2}{18}$
		$1946\frac{2}{18}$
,,	Mekhir	$121\frac{2}{18}$
		$2068\frac{6}{18}$
,,	Tybi	$121\frac{2}{18}$
		2190
,,	Khoiak	$121\frac{2}{18}$
		$2311\frac{2}{18}$
,,	Athyr	$121\frac{2}{18}$
		$2433\frac{6}{18}$
30	Paophi	$4\frac{1}{18}$
		$2437\frac{7}{18}$
29	,,	$4\frac{1}{18}$
		$2441\frac{8}{18}$
28	,,	$4\frac{1}{18}$
		$2445\frac{9}{18}$
27	,,	$4\frac{1}{18}$
		$2449\frac{10}{18}$
26	,,	$4\frac{1}{18}$
		$2453\frac{11}{18}$
25	,,	$4\frac{1}{18}$
		$2457\frac{12}{18}$

24	Paophi	$4\frac{1}{18}$	
		$2461\frac{3}{18}$	
23	,,	$4\frac{1}{18}$	
		$2465\frac{4}{18}$	
*22	,,	$4\frac{1}{18}$	= The 4 completed years— $2466\frac{7}{72}$, $2467\frac{8}{72}$, $2468\frac{9}{72}$, and $2469\frac{9}{72}$. The Rising $2469\frac{9}{72}$ (7th regnal yr. of Amenhotep I) is officially reported as having occurred $3\frac{1}{2}$ months = 105 days, ahead of the Clock = $425\frac{5}{18}$ Cyc. Yrs. from the time of the last Coincidence with Natural Time, which must have been about Cyc. Div. 1244.
		$2469\frac{5}{18}$	
21	,,	$4\frac{1}{18}$	
		$2473\frac{6}{18}$	
20	,,	$4\frac{1}{18}$	
		$2477\frac{7}{18}$	
19	,,	$4\frac{1}{18}$	
		2482	
18	,,	$4\frac{1}{18}$	
		$2486\frac{1}{18}$	
17	,,	$4\frac{1}{18}$	
		$2490\frac{2}{18}$	

16	Paophi	$4\frac{1}{18}$	
		$2494\frac{3}{18}$	
15	,,	$4\frac{1}{18}$	
		$2498\frac{4}{18}$	
*14	,,	$4\frac{1}{18}$	= The 4 completed years— $2499\frac{17}{72}$, $2500\frac{18}{72}$, $2501\frac{19}{72}$, and $2502\frac{20}{72}$ (15th yr. Thothmēs I).
		$2502\frac{5}{18}$	
13	,,	$4\frac{1}{18}$	
		$2506\frac{6}{18}$	
12	,,	$4\frac{1}{18}$	
		$2510\frac{7}{18}$	
11	,,	$4\frac{1}{18}$	
		$2514\frac{8}{18}$	
10	,,	$4\frac{1}{18}$	
		$2518\frac{9}{18}$	
9	,,	$4\frac{1}{18}$	
		$2522\frac{10}{18}$	
*8	,,	$4\frac{1}{18}$	= The 4 completed years— $2523\frac{41}{72}$, $2524\frac{42}{72}$, $2525\frac{43}{72}$, and $2526\frac{44}{72}$ (3rd yr. Thothmēs III).
		$2526\frac{11}{18}$	
7	,,	$4\frac{1}{18}$	
		$2530\frac{12}{18}$	
6	,,	$4\frac{1}{18}$	
		$2534\frac{13}{18}$	
5	,,	$4\frac{1}{18}$	
		$2538\frac{14}{18}$	
4	,,	$4\frac{1}{18}$	
		$2542\frac{15}{18}$	
3	,,	$4\frac{1}{18}$	
		$2546\frac{16}{18}$	

2 Paophi		$4\frac{1}{18}$	
		$2550\frac{17}{18}$	
*1	,,	$4\frac{1}{18}$	= The 4 completed years—
		2555	$2551\frac{68}{72}$, $2552\frac{70}{72}$, $2553\frac{71}{72}$, and 2555 (33rd yr. Thothmēs III).
30 Thoth		$4\frac{1}{18}$	
		$2559\frac{1}{18}$	
29	,,	$4\frac{1}{18}$	
		$2563\frac{2}{18}$	
28	,,	$4\frac{1}{18}$	
		$2567\frac{3}{18}$	
27	,,	$4\frac{1}{18}$	
		$2571\frac{4}{18}$	
26	,,	$4\frac{1}{18}$	
		$2575\frac{5}{18}$	
25	,,	$4\frac{1}{18}$	
		$2579\frac{6}{18}$	
24	,,	$4\frac{1}{18}$	
		$2583\frac{7}{18}$	
23	,,	$4\frac{1}{18}$	
		$2587\frac{8}{18}$	
*22	,,	$4\frac{1}{18}$	= The 4 completed years—
		$2591\frac{9}{18}$	$2588\frac{33}{72}$, $2589\frac{34}{72}$, $2590\frac{35}{72}$, and $2591\frac{36}{72}$ (17th yr. Amenhotep II).
21	,,	$4\frac{1}{18}$	
		$2595\frac{10}{18}$	
20	,,	$4\frac{1}{18}$	
		$2599\frac{11}{18}$	

19	Thoth	$4\frac{1}{18}$	
		$2603\frac{2}{18}$	
18	,,	$4\frac{1}{18}$	
		$2607\frac{3}{18}$	
17	,,	$4\frac{1}{18}$	
		$2611\frac{4}{18}$	
16	,,	$4\frac{1}{18}$	
		$2615\frac{5}{18}$	
*15	,,	$4\frac{1}{18}$	= The 4 completed years—
		$2619\frac{6}{18}$	$2616\frac{0}{72}$, $2617\frac{2}{72}$, $2618\frac{3}{72}$,
14	,,	$4\frac{1}{18}$	and $2619\frac{4}{72}$ (45th yr.
		$2623\frac{7}{18}$	Amenhotep II).
13	,,	$4\frac{1}{18}$	
		2628	
12	,,	$4\frac{1}{18}$	
		$2632\frac{1}{18}$	
11	,,	$4\frac{1}{18}$	
		$2636\frac{2}{18}$	
10	,,	$4\frac{1}{18}$	
		$2640\frac{3}{18}$	
9	,,	$4\frac{1}{18}$	
		$2644\frac{4}{18}$	
*8	,,	$4\frac{1}{18}$	= The 4 completed years—
		$2648\frac{5}{18}$	$2645\frac{7}{72}$, $2646\frac{8}{72}$, $2647\frac{9}{72}$,
7	,,	$4\frac{1}{18}$	and $2648\frac{20}{72}$ (20th yr.
		$2652\frac{6}{18}$	Amenhotep III).
6	,,	$4\frac{1}{18}$	
		$2656\frac{7}{18}$	

5 Thoth	$4\frac{1}{18}$	
	$2660\frac{8}{18}$	
4 „	$4\frac{1}{18}$	
	$2664\frac{9}{18}$	
3 „	$4\frac{1}{18}$	
	$2668\frac{10}{18}$	
2 „	$4\frac{1}{18}$	
	$2672\frac{11}{18}$	
*1 „	$4\frac{1}{18}$	= The 4 completed years— $2673\frac{45}{72}$, $2674\frac{46}{72}$, $2675\frac{47}{72}$, and $2676\frac{48}{72}$ (1st yr. Tūt. ankh. amen).
	$2676\frac{12}{18}$	
30 Mesorē	$4\frac{1}{18}$	
	$2680\frac{13}{18}$	
9 „	$85\frac{3}{18}$	
	$2765\frac{16}{18}$	
*8 „	$4\frac{1}{18}$	= The 4 completed years— $2766\frac{65}{72}$, $2767\frac{66}{72}$, $2768\frac{67}{72}$ and $2769\frac{68}{72}$ (41st yr. Rāmēsēs II).
	$2769\frac{17}{18}$	
7 „	$4\frac{1}{18}$	
	2774	
6 „	$4\frac{1}{18}$	
	$2778\frac{1}{18}$	
5 „	$4\frac{1}{18}$	
	$2782\frac{2}{18}$	
4 „	$4\frac{1}{18}$	
	$2786\frac{3}{18}$	
3 „	$4\frac{1}{18}$	
	$2790\frac{4}{18}$	

2	Mesorē	$4\frac{1}{18}$	
		$2794\frac{5}{18}$	
*1	,,	$4\frac{1}{18}$	= The 4 completed years— $2795\frac{21}{72}$, $2796\frac{22}{72}$, $2797\frac{23}{72}$, and $2798\frac{24}{72}$ (2nd yr. Merenptah).
		$2798\frac{6}{18}$	
P. 30–1	Epiphi	$121\frac{12}{18}$	
		2920	
,,	Paoni	$121\frac{12}{18}$	
		$3041\frac{12}{18}$	
,,	Pakhons	$121\frac{12}{18}$	
		$3163\frac{6}{18}$	
,,	Pharmuthi	$4\frac{1}{18}$	
		$3167\frac{7}{18}$	
29	,,	$4\frac{1}{18}$	
		$3171\frac{8}{18}$	
*28	,,	$4\frac{1}{18}$	= The 4 completed years— $3172\frac{3}{72}$, $3173\frac{4}{72}$, $3174\frac{5}{72}$, and $3175\frac{6}{72}$ (11th yr. Takelat II). This being our last datum, the list of Risings closes.
		$3175\frac{9}{18}$	

CHECK

THESE results, it will be seen, are based on PROGRESSIVE CLOCK TIME. Will they stand firm, as regards the years, if, instead of P. CLOCK TIME, we base them on TRUE TIME? The two years that I have said I rely on as what I may call CLINCH DATES, are the 3rd and the 33rd regnal years of THOTHMĒS III—A.M. $2524\frac{7}{12}$ and A.M. 2555. Let us therefore test these two: and first as regards—A.M. $2524\frac{7}{12}$.

But what are we to take as TRUE TIME? The date given in the OFFICIAL REPORT, *i.e.* 21st Epiphi? Or the date to which P. 1 THOTH points as shown in TABLE II? The former works out at A.M. $2757\frac{7}{9}$, which is absurd. I therefore propose to go by my TABLE. According to Clock Time, as shown above, SOTHIS rose on 8th Paophi. From TABLE II we find that when F. 1 Epiphi (normal point of RISING) falls at 8th Paophi, P. 1 Thoth, or True Time, falls at 24th Pakhons. Now, as each day represents $4\frac{1}{8}$ Cyclical Years, $24 \times 4\frac{1}{8} = 97\frac{1}{2}$. Pharmūthi closed at Cyc. Division $973\frac{1}{3}$. Therefore that $+97\frac{1}{2}$=Cyc. Div. $1070\frac{5}{6}$. Add 1460 Years for the previous first Cycle = A.M. $2530\frac{5}{6}$. But 1 Paophi

(which = $4\frac{1}{18}$ Cyc. Years) is only 1 Paophi *commencing*. Hence, the $4\frac{1}{18}$ Cyc. Years which it represents are only *commencing too*. Therefore, from A.M. $2530\frac{2}{3}$ we must deduct $4\frac{1}{18}$ = A.M. $2526\frac{11}{18}$. Now, this is one of the 4 available years shown above, namely, $2523\frac{1}{72}$, $2524\frac{2}{72}$, $2525\frac{3}{72}$, and $2526\frac{4}{72}$; and our HEB LIST shows us that of these A.M. $2524\frac{2}{72}$ is the one we want. Now let us similarly test—A.M. 2555.

By Clock Time the RISING took place on 1st Paophi. From TABLE II we find that this equates with True Time 1st Paoni, *commencing* = the month of Pakhons, *ending*=Cyc. Div. 1095. This plus 1460 years for the first Cycle=exactly A.M. 2555—again one of the 4 available years shown above, and in this case, according to our HEB LIST, the very year we want.

Or, let us take one of the other dates—say that of the RISING reported as having happened in the reign of Tūt-ānkh-amen. By Clock Time it occurred on 1 Thoth. P. 1 Thoth, therefore, was then equating with F. 1 Epiphi=Cyc. Div. 1916⅔. Hence the year must have been A.M. 2676⅔=B.C. 1919⅓. It appears to have coincided with Tūt-ānkh-amen's 1st regnal year. This kind of RISING took place only once in every Cycle.

But how did those who prepared the OFFICIAL REPORTS arrive at their dates? They must have had some principle on which to build their results. What was it? I confess I do not know. As P. 1

Thoth travels round the Cycle till it comes in A.M. 3676¾ to F. 1 Epiphi and then goes on till it returns to F. 1 Thoth, and as F. 1 Epiphi marks the point of every RISING, the dates of the RISING, as shown by me, naturally *retrogress* from the higher to the lower dates in each month. In the OFFICIAL REPORTS this is reversed. There, the dates *progress* from lower to higher—*e.g.* 7, 14, 21, 28 Mesorè—which seems to show that in the OFFICIAL scheme they are indicated, not by F. 1 Epiphi, as P. 1 Thoth revolves towards and past it, but by P. 1 Thoth itself pointing to successive dates on the Fixed Clock.* By this method, however, I do not see how the true Year can ever be obtained. For instance, take 1 Tybi, the OFFICIAL date of the RISING in Takelat II's 11th regnal year. If that be regarded as P. 1 Tybi, True Time was Cyc. Div. 730, and the year works out at A.M. 3650. But if 1 Tybi be regarded as itself True Time to which P. 1 Thoth points, then the year works out at A.M. 3406⅔. Either way it is wrong; for the true year could not have been other than A.M. 3175½. Roughly the dates in the OFFICIAL REPORTS advance by 7 days. But this is not always the case. And for every 7 days, when it is 7 days, the amount of time by which RISING TIME is in advance of Clock or Calendar Time is just double 7. This seems to correspond with the fact that the Natural Seasons are ahead

* NOTE.—As a matter of fact P. 1 Thoth *never* indicates the RISING, except *once* in the Cycle.

of the Calendar Seasons by just double the amount of time by which the Calendar Year is short of the Natural Year. But, as the OFFICIAL REPORTS do not give a view of the RISINGS throughout the Cycle, but only a short segment of the Cycle, and as even that segment is irregularly constructed, it seems impossible to reduce them to any principle which will enable us to see *why* such and such a date is reported for a particular RISING.

A little gleam of light illumines the darkness if we examine the case of the RISING in A.M. $3175\frac{1}{2}$. This, of course, is what *I* say the year was. The OFFICIAL REPORTS give no year. It is made up of $1460 + 1460 + 255\frac{1}{2}$. That is to say, it is $12\frac{1}{6}$ points further on than $243\frac{1}{3}$ on the Cyclical Clock, and it equates with F. 4 Athyr. This was the point at which, at that stage of the 3rd Cycle, P. 1 Thoth, or New Year's Day, fell, marking in that particular year the beginning of the annual revolution. As the RISING always occurs at F. 1 Epiphi, it took place that year, as it was bound to have taken place, exactly 7 months 26 days after New Year's Day. This relation between P. 1 Thoth and F. 1 Epiphi is one that, starting with a 10 months' interval, steadily changes right throughout the Cycle, and therefore it constitutes a splendid CONTROL in connection with calculations made for the purpose of obtaining TRUE TIME. The OFFICIAL date of this particular RISING is 1 Tybi, *i.e.* 6 months before F. 1 Epiphi. By the Clock it occurred 8 months 27

days later, *i.e.* on P. 28 Pharmūthi, or 2 months 2 days before F. 1 Epiphi. Now, it will be noticed that when this date, 1 Tybi, thus OFFICIALLY taken as RISING TIME, is treated as Calendar Time and placed on the Clock at F. 1 Epiphi (normal point of RISING), P. 1 Thoth, or New Year's Day, falls 4 months before then at F. 1 Phamenoth, thus making Cyc. Div. 730 = A.M. 3650, True Time. This, however, it certainly was not. As Clock Time for the RISING was P. 28 Pharmūthi, True Time was —as we already know it to have been—F. 4 Athyr, *i.e.* 3 months 26 days earlier than F. 1 Phamenoth, as will be apparent if the P. Clock be superposed upon the F. Clock and the necessary adjustment made. Now, strange to say, if we add this 3 months 26 days to the 4 months between F. 1 Phamenoth and the OFFICAL date, 1 Tybi, treated as P. 1 Tybi, and placed at F. 1 Epiphi, we get exactly the 7 months 26 days that intervened that year between P. 1 Thoth, or New Year's Day, at F. 4 Athyr and the RISING on F. 1 Epiphi. But of course, as already observed, perhaps in the OFFICIAL REPORTS 1 Tybi is regarded as itself True Time, thus making the year the impossible one, A.M. $3406\frac{2}{3}$. Look at the matter how we will, there seems to be no discoverable reason why 1 Tybi should have been fixed upon, rather than, say, P. 28 Pharmūthi, as the date of the RISING in the 11th year of the reign of Takelat II. And the same remark is applicable to all the other data in the OFFICIAL LIST of RISINGS.

Of course the B.C. dates given in Petrie's List (Vol. II, p. 32) cannot possibly be correct. They are in no way connected with the SOTHIC CYCLE; they do not equate with any of the dates in the HEB LIST; and they are based on a shift of 4 years to 1 day, instead of on a shift of $4\frac{1}{8}$ years to 1 day. Thus, Hatshepsūt's 16th year, corresponding to Thothmēs III's 3rd year, is given as B.C. 1498, and Thothmēs III's 33rd year is given as B.C. 1470 = a difference of 28 years, agreeing with 4 times 7, the difference between 21st and 28th Epiphi. B.C. 1498 was really B.C. $1471\frac{5}{12}$; but, assuming that it is correct, B.C. 1470 (really B.C. 1441) ought to have been B.C. $1469\frac{1}{8}$.

The unique nature of the RISING in Tūt-ānkh-amen's 1st year, A.M. $2676\frac{2}{3}$, is probably what gave rise to what has been styled the ERA OF MENOPHRES. It was, of course, B.C. $1319\frac{1}{3}$.

List of Sothic Risings.

According to Official Reports (*Petrie*, vol. ii).

Rising.	Clock Time.	Official Reports.
Senwosri III, 7th yr. A.M. $1771\frac{2}{3}$	14 Phar.	15th day of 8th month = 1 day after Clock Time.
Amenhotep I, 7th yr. A.M. 2470	22 Paop.	9 (7 ?) Epiphi = $3\frac{1}{2}$ mths. in advance.
Thothmēs I, 15th yr. A.M. $2499\frac{7}{12}$	14 ,,	14 Epiphi = 3 mths. in advance.
,, III, 3rd yr. A.M. $2524\frac{7}{12}$	8 ,,	21 Epiphi = 2 mths. 17 d. in advance.
,, III, 33rd yr. A.M. 2555	1 ,,	28 Epiphi = 2 mths. 5 d. in advance.
Amenhotep II, 17th yr. A.M. $2591\frac{9}{18}$	22 Thoth	7 Mesorē = $1\frac{1}{2}$ mths. in advance.
,, II, 45th yr. A.M. $2619\frac{6}{18}$	15 ,,	14 Mesorē = 1 mth. 1 d. in advance.
,, III, 20th yr. (Nimmūrīyā), A.M. $2648\frac{3}{18}$	8 ,,	21 Mesorē = 17 d. in advance.
Tūt.ānkh.amen, 1st yr. A.M. $2676\frac{2}{3}$	1 ,,	28 Mesorē = 3 d. in advance.
Rāmēsēs II, 41st yr. A.M. $2769\frac{7}{18}$	8 Mesorē	22 (21 ?) Thoth = 1 mth. 13 d. behind the Clock.
Merenptāh, 2nd yr. A.M. $2798\frac{1}{3}$	1 ,,	29 (28 ?) Thoth = Nearly 2 mths. behind.
Takelat II, 11th yr. A.M. 3175	28 Phar.	1 Tybi (Conder) = 3 mths. 27 d. in advance.

ANALYSIS.

From A.M. $1771\frac{2}{9}$ to A.M. 2470 (Cyc. Divs. $311\frac{2}{9}$–1010) = a stretch of $698\frac{2}{9}$ years, within which NATURAL TIME has shot ahead of the CLOCK by $8\frac{1}{2}$ months.

From A.M. 2470 to A.M. $2676\frac{2}{3}$ (Cyc. Divs. 1010–$1216\frac{2}{3}$) = a stretch of $206\frac{2}{3}$ years, during which the rate at which NATURAL TIME is moving, though still ahead of CLOCK TIME, steadily and regularly diminishes, till the two coincide soon after Cyc. Div. $1216\frac{2}{3}$—probably Cyc. Div. 1244.

From A.M. $2676\frac{2}{3}$ to A.M. $2798\frac{1}{3}$ (Cyc. Divs. $1216\frac{1}{3}$–$1338\frac{1}{3}$) = a stretch of $121\frac{1}{3}$ years, at the end of which NATURAL TIME has so slowed down that it is actually 2 months behind CLOCK TIME.

From A.M. $2798\frac{1}{3}$ to A.M. 3175 (Cyc. Divs. $1338\frac{1}{3}$–1460 + 255) = a stretch of $376\frac{2}{3}$ years, at the end of which we find NATURAL TIME again ahead of CLOCK by 3 months 27 days.

In this analysis we have been dealing with a period of $1403\frac{7}{9}$ years. There still remains a stretch of $56\frac{2}{9}$ years (Cyc. Divs. 255–$311\frac{2}{9}$) to complete the CYCLE of 1460 YEARS, at the end of which period the two STANDARDS OF TIME doubtless once more coincide as they did at the outset.

In all this we seem to have revealed a kind of CYCLICAL PROCESS, or WOBBLE, which it will be convenient to illustrate by means of the accompanying Ellipse.

It will be noticed that the changes from acceleration to retardation and from retardation to acceleration, with regular intermediate coincidences, are all crowded up in the smaller portion of the Ellipse, while the larger portion seems to consist of one long sweep from Cyc. Div. $311\frac{2}{5}$ to Cyc. Div. 1010. I say "seems to consist," because in all probability this is merely a result of the fact that we have no data for any of the Risings that occurred between the Rising in the 7th regnal year of Senwosri III, and the Rising in the 7th (reported as the 9th) regnal year of Amenhotep I. Had our available resources included any such data, it is reasonably presumable that the larger portion of the Ellipse, instead of being one long sweep, as shown, would reveal periodical changes corresponding to those on the other side.

As it stands, the Ellipse seems to me to indicate some obscure Cyclical Process, perhaps connected with SIRIUS. Beyond this, however, and the uses to which I have put what I have thus vaguely became aware of, I am at present unable to go. But one or more of my readers, skilled in mathematics and astronomical lore, might find it worth his or their while to probe the matter thoroughly. Perchance, by very reason of this disturbing factor which has practically deflected me into my results, I shall at least have been the means of drawing expert attention to the existence of what may turn out to be some important Kosmic Influence which

has hitherto evaded the search-lights of Modern Science. On the other hand, it may be something already well known to astronomers. If so, all the better. With expert aid my system can then be perfected on a proper scientific basis.

COMPARISON BETWEEN OFFICIAL DATES AND TRUE TIME.

Year.	True Time.	Official Date.	How far Official Date behind True Time.
A.M. 1771$\frac{2}{9}$	18 Athyr	15 Pharmūthi	4 mths. 26 da.
,, 2470	10 Pakhons	9 Epiphi	1 mth. 28 ,,
,, 2499$\frac{17}{72}$	18 ,,	14 ,,	1 ,, 25 ,,
,, 2524$\frac{7}{72}$	24 ,,	21 ,,	1 ,, 26 ,,
,, 2555	1 Paoni	28 ,,	1 ,, 26 ,,
,, 2591$\frac{9}{18}$	10 ,,	7 Mesorē	1 ,, 26 ,,
,, 2619$\frac{16}{18}$	17 ,,	14 ,,	1 ,, 26 ,,
,, 2648$\frac{5}{18}$	24 ,,	21 ,,	1 ,, 26 ,,
,, ~~2676$\frac{2}{3}$~~	1 Epiphi	28 ,,	1 ,, 26 ,,
,, 2769$\frac{17}{18}$	23 ,,	22 Thoth	1 ,, 28 ,,
,, 2798$\frac{1}{3}$	1 Mesorē	29 ,,	1 ,, 27 ,,
,, 3175	3 Athyr	1 Tybi	1 ,, 28 ,,

This is a very interesting comparison. There are 12 RISINGS, and in no less than 7 of them the OFFICIAL date is 1 month 26 days behind TRUE TIME. Of the others the RISING in A.M. 1771$\frac{2}{9}$ stands out by itself, because there OFFICIAL TIME and CLOCK TIME were nearly level. The RISINGS in A.M. 2470, 2769$\frac{17}{18}$, and 2798$\frac{1}{3}$ are cases in which

the sequence 7, 14, 21, 28 have been altered—7 to 9, 21 to 22, and 28 to 29. The case of the RISING in A.M. 2499½ seems unique. The original sequence has not been altered, and yet it alone shows OFFICIAL TIME 1 month 25 days behind TRUE TIME.

Now, why should they all be on an average 1 month 26 days behind TRUE TIME? I can think of only one explanation, and it covers at least all the 12 cases except the first, the RISING in Senwosri III's 7th year, which I shall deal with separately.

We have seen that in the OFFICIAL scheme the Indicator of the RISING seems to be P. 1 Thoth, not F. 1 Epiphi as in my method. In my method, it will be remembered, P. 1 Thoth indicates the TRUE TIME. Well, then, if, adopting the assumed OFFICIAL method, we superpose the PROGRESSIVE CLOCK on the FIXED CLOCK, and adjust them so that P. 1 Thoth points to any one of the above 11 OFFICIAL DATES as shown on the Fixed Clock, it will be noticed that exactly 2 months previously P. 1 Epiphi on the Progressive Clock points to a Cyclical Division on the Fixed Clock which is *very near* what, according to my method, is TRUE TIME. If instead of 2 months we take, say, 1 month 26 days, or whatever the precise interval is, it will point to exactly that TRUE TIME. Thus, instead of an interval starting at 10 months and gradually diminishing, between P. 1 Thoth and the Point of Rising, F. 1 Epiphi, as in my method, we get a constant average

interval of, say, 1 month 26 days between P. 1 Epiphi and P. 1 Thoth. Were this mode of procedure sound, it would certainly go far to support Professor Breasted in his view that Senwosri III's 7th regnal year was B.C. 1880. For P. 1 Thoth would then point to 15th Pharmūthi as the Calendrical date of the RISING, and TRUE TIME would be 1 month 26 days before that=18th Mekhir=Cyc. Div. or Year $2141\frac{1}{3}$=B.C. $1854\frac{2}{3}$. But *is* this method sound? I do not think so. In the first place, the dates on the Fixed Clock, to which P. 1 Thoth is supposed to be pointing, are *not* Calendrical Time. They are theoretically Natural Time. Secondly, I hardly think that the OFFICIAL REPORTS are intended to represent P. 1 Thoth as pointing to anything except what was then understood to be real Natural Time. Nay, I believe they are intended to represent P. 1 Thoth as indicating both TRUE TIME and the RISING—a thing it never does, except in one solitary instance, when it falls once, and once only, in the course of the Cycle at F. 1 Epiphi. Thirdly, Cyc. Div. or A.M. $2141\frac{1}{3}$=B.C. $1854\frac{2}{3}$, is the 117th year of the 2nd G.P.Y. of the 2nd CYCLE. Were that TRUE TIME, then Poole's statement (which we found to be correct) that the G.P.Y. in which Amenemhāt II flourished and the G.P.Y. which commenced in the age of Khūfū were identical, would have to be rejected. Fourthly, it seems impossible that this new method should be applicable to the RISING in Senwosri III's time in the same way

as it appears to be applicable in the other cases. There is a great difference between it and the other cases. In the latter the OFFICIAL REPORTS are often months either in advance or behind my CLOCK TIME. Only once—the RISING in Tūt-ānkh-amen's reign—were they only 3 days in advance: but that was a very special case in the history of the Cycle. Whereas, in the case of the Senwosri III RISING, the OFFICIAL REPORTS and my CLOCK TIME were only different by a day! Fifthly, as the Cycle goes on, the interval between P. 1 Thoth and the RISING is *never* constant, and unquestionably starts at 10 months. I have no desire to maintain any of my propositions if they are plainly untenable: but for the reasons above set forth I submit that the period I have assigned for Senwosri III's 7th regnal year, namely, A.M. 1772=B.C. 2224, and not Professor Breasted's B.C. 1880, is the correct period.

The following brief NOTES will conveniently, and I hope usefully, round off the investigations upon which we have been engaged:—

18TH DYNASTY.

From end of reign of THOTHMĒS III in A.M. 2576.

Petrie (vol. ii, p. 153) assigns Amenhotep II a reign of about 26 years, founding on Manētho, who says he reigned 25 yrs. 10 mths. For some time Egyptologists thought the reign must have been short. The Lateran

Obelisk, however, records that it was set up *in this reign* 35 years after it was abandoned, presumably, says Petrie, at the demise of Thothmēs III, who had ordered it. But apart altogether from this, the reign must needs be extended up to at least A.M. $2619\frac{6}{18}$, the date of the Rising said to have occurred on 14th Mesorē. Hence—

		A.M.
		2576
Amenhotep II	46 yrs. Sothic Risings on 7 Mesorē, A.M. $2591\frac{9}{18}$, and 14 Mesorē, A.M. $2619\frac{16}{18}$.	$44\frac{16}{18}$
		$2620\frac{16}{18}$
Thothmēs IV	10 yrs. Relations with Rimmon-Nirāri of Assyria.	9
		$2629\frac{16}{18}$
Amenhotep III (Nimmūrīyā)	Sothic Rising in 20th yr. A.M. $2648\frac{5}{18}$.	
	31 yrs.	30
		$2659\frac{16}{18}$
Amenhotep IV (Ākh.en.āten)	Relations with Būrnabūrias of Babylon	
	17 yrs.	16
		$2675\frac{16}{18}$
Rā.smenkh.kā (Sā.ākā.rā)	$1\frac{4}{18}$ yrs.	$\frac{14}{18}$
		$2676\frac{2}{18}$
Tūt.ānkh.amen	Sothic Rising, A.M. $2676\frac{2}{3}$ = B.C. $1319\frac{1}{3}$. ~~Occurred once~~	

		A.M.
	in each Cycle, normally on P. 1 Thoth. Also Hunti Heb 52nd on List, and 13th Quarterly.	
	$10\frac{6}{18}$ yrs.	$9\frac{6}{18}$
		2686
Āy	13 yrs.	12
		2698
Hor.em.heb	$11\frac{7}{8}$ yrs. (Uncertain period).	$10\frac{7}{8}$
		$2708\frac{7}{8}$

19th Dynasty.

Rāmēsēs I	2 years.	A.M. $2708\frac{7}{8}$–$2709\frac{7}{8}$
Seti I	21 years.	,, $2709\frac{7}{8}$–$2729\frac{7}{8}$
Rāmēsēs II	Just over 68 years.	
	1st year.	,, $2729\frac{7}{8}$ = B.C. $1266\frac{1}{8}$
	41st year, Sothic Rising on 22 (21 ?) Thoth.	,, $2769\frac{7}{8}$
	68 year.	,, $2796\frac{7}{8}$
Merenptāh	1st year.	,, $2797\frac{1}{3}$ = B.C. $1198\frac{2}{3}$
	2nd year, Sothic Rising on 29 (28 ?) Thoth. Also Hunti Heb, 56th	

	on List, and 14th Quarterly.	A.M. $2798\frac{1}{3}$ = B.C. $1197\frac{2}{3}$
	20th year.	,, $2816\frac{1}{3}$
Seti II	12 years.	,, $2816\frac{1}{3}$–$2828\frac{3}{4}$
Amen.mēsēs	Temporarily excluding Tewosret. SED HEB, 57th on List.	
	1 year	,, $2828\frac{3}{4}$ = B.C. $1167\frac{1}{4}$
Towosret	TROY said to have fallen in her time.	
	4 years.	3
		,, $2831\frac{3}{4}$
Sa.ptāh	Married Tewosret.	
	6 years.	5
		,, $2836\frac{3}{4}$
Anarchy, and usurpation of Ārisū the Syrian, lasting about 5 years.		5
		,, $2841\frac{3}{4}$
Setnekht	1 year ?	1
		,, $2842\frac{3}{4}$

20TH DYNASTY.

Rāmēsēs III	32 years.	A.M. $2842\frac{3}{4}$–$2873\frac{3}{4}$.
	5th year.	A.M. $2846\frac{3}{4}$ = B.C. $1149\frac{1}{4}$. Invasion of Egypt by Mashausha, Lebu, Sabata, Qaʾqasha,

Shaytep, Hasa, and Baqana, under chiefs named Didi, Masha-kenu-mar, Aqu . . . -mar, and Zautmar. Also described as "the people of the Tamahu . . . assembled together, united with the Lebu, the Sepdu (Sabata ?), the Mashausha . . . the Bureru" (*Petrie*, vol. iii, p. 148).

8th year. A.M. $2849\frac{3}{4}$ = B.C. $1146\frac{1}{4}$. Invasion of Egypt by a league gathered in the AMORITE-LAND (SYRIA)—Kheta, Qedi, Qerqa-mesha, Arothu, and Arosa.

Allies who came by sea—Pulosathu, Zakkaru, Shaklu-sha, Daanau, or Daanona, Uasha-shau, and Shairdana (KRETE and the ISLES OF THE SEA) (*Petrie*, vol. iii, pp. 150, 151).

11th year. A.M. $2852\frac{3}{4}$ = B.C. $1143\frac{1}{4}$. Invasion of Egypt by Mashau-ash and Tahennu, Lebu, and Sepdu, under chief named Masha-shal, son of Kapur (*Petrie*, vol. iii, p. 153).

The remainder of this Dynasty is of no interest.

22ND DYNASTY.

Shûshanq I	21 years.	A.M. $3030\frac{1}{12}$–$3050\frac{11}{12}$.

In 1 *Kings* xiv, 25, and in 2 *Chronicles* xii, 2, it is stated that in the 5th regnal year of Rehoboam, king of Judah, Shishak king of Egypt came up against Jerusalem with a host of Lubim, Sukkiim, and Ethiopians, and plundered the Temple. The 5th year of Rehoboam was A.M. $3034\frac{1}{2}$ = B.C. $961\frac{1}{2}$. This event, therefore, was also in the 5th regnal year of Shûshanq I.

Uasarkon I	36 years.	A.M. $3050\frac{1}{12}$–$3086\frac{11}{12}$.

In 2 *Chron.* xiv, 9 and xvi, 8, it is stated that Zerah the Ethiopian invaded Judah, that Asa, king of Judah, marched against him, that a battle was fought in the valley of Zephathah at Mareshah, and that the Ethiopians were routed. This seems to have been in the 14th regnal year of Asa (2 *Chron.* xv, 10). That was A.M. $3063\frac{1}{2}$ = B.C. $932\frac{1}{2}$. It therefore occurred in the 14th regnal year of Uasarkon I (Ua-Zerakh-on).

Takelat I	26 years.	A.M. $3086\frac{1}{12}$–$3111\frac{11}{12}$.
Hor.si.ast (Co-regent).		
Uasarkon II	29 years.	SED HEB, 67th on List,

	celebrated in 22nd yr. = A.M. 3132½.	A.M.	3111½–3139½.
Shûshanq II	25½ years.	,,	3139½–3165⅛.
Talelat II	25 years. SOTHIC RISING on P. 1 Tybi, in 11th regnal year = A.M. 3175 = B.C. 820½.	,,	3165⅛–3189⅛.
Shûshanq III	53 years	,,	3189⅛–3242⅛.
Pamāy	4 years	,,	3242⅛–3246⅛.
Shûshanq IV	37 years	,,	3246⅛–3283⅛.
	256½.		
Less for Co-regencies, at least	23		
	233½.		

PRINTED BY WILLIAM CLOWES AND SONS, LIMITED, LONDON AND BECCLES.